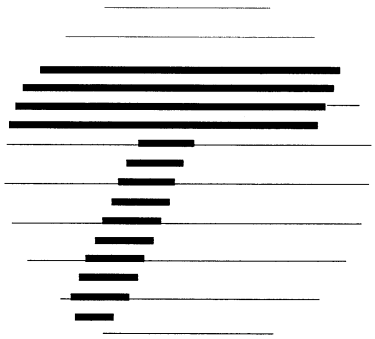
NEW YORK STATE
DEPARTMENT OF TRANSPORTATION



POLICY and STANDARDS for the Design of Entrances to State Highways

November 24, 2003

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APPENDIX 5A
DRIVEWAY DESIGN POLICY

POLICY AND STANDARDS FOR THE DESIGN OF ENTRANCES TO STATE HIGHWAYS

PREFACE

This policy (commonly referred to as the "Driveway Design Policy") outlines the Department's technical and procedural requirements involved in the planning, design, construction and maintenance of entrances to a State highway. While this policy is most commonly used for driveways, it applies to all entrances, including walkways, stairways, city and village streets, town and county highways, private access roads, subdivision roads (defined in Section 5A.10 of this policy), and roads owned by other State agencies and authorities.

Property owners seeking to build or improve an entrance to a State highway must, in addition to meeting applicable local requirements and the State Environmental Quality Review Act (SEQR), obtain and comply with all conditions of a New York State Department of Transportation Highway Work Permit. Issuance of the Highway Work Permit is contingent upon Department review and approval of the planning and design details of the entrance.

Property owners, developers, consultants, and local officials play important roles in the process and should be aware of specific portions of this policy.

- Sections 5A.2 and 5A.3 outline the responsibilities of the property owner. Since **residential driveways** have less impact on the highway system than commercial driveways and subdivisions, residential property owner responsibilities are generally limited to Sections 5A.2.1 and 5A.3.1 through 5A.3.6. Design requirements for residential driveways are detailed in Sections 5A.4, 5A.5, and 5A.9.
- Sections 5A.4, 5A.6, 5A.7, and 5A.9 contain **commercial driveway** design requirements, which may be useful to consultants hired by the property owner to plan and design the access to the highway.
- Section 5A.4, 5A.7, 5A.8, and 5A.9 contain **subdivision, municipal street and municipal highway** design requirements, which may be useful to developers and municipalities planning and designing access to a State highway.
- Sections 5A.2 and 5A.4 include procedural requirements and general design guidelines, respectively, which may interest **local government planning and review agencies or boards.**

This policy is in dual units. Metric units are shown with U.S. customary units in parentheses. Similarly, the metric NYSDOT Driveway Standard Sheet references (currently M608-6 through M608-9) are provided with references to Figures 5A-2 through 5A-5 (in U.S. customary units) in parentheses. The values are hard converted (not a precise conversion) to better represent the degree of accuracy needed.

APPENDIX 5A
DRIVEWAY DESIGN POLICY

COPIES

Electronic copies of this policy and the highway work permit forms are available on the Department's Internet home page under http://www.dot.state.ny.us/traffic/tehsdmain.html. For detailed information on the permitting process and its requirements, refer to the Department's Manual of Administrative Procedure 7.12-2 on Highway Work Permits.

CONTACT PERSON

Questions concerning this policy should be directed to the NYSDOT Highway Maintenance Resident Engineer. Names and phone numbers for the Resident Engineers are provided:

- On the Internet at http://www.dot.state.ny.us/reg/regmenu.html. Click on your location on the state map and then on the link for "organization, contacts & phone numbers."
- In the Government Listings (blue pages) of your local phone book. Look under State Offices, then Transportation Department of, and then Transportation Maintenance.
- By calling the Main Office Highway Work Permit Section at 1 (888) 783-1685.

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5A.1 INTRODUCTION

Section 52 of the New York State Highway Law and Section 1220-a of the New York State *Vehicle and Traffic Law* prohibit entrance on and work being performed on any State highway except pursuant to the authority of a permit and under rules and regulations prescribed by the Commissioner of Transportation.

In accordance with the exercise of these duties, the Department of Transportation has standards and procedures governing such work within the highway right of way including the construction of entrances to State highways so as to regulate traffic entering or leaving abutting properties. These policies, standards, and procedures protect the public through orderly control of traffic movements onto and from the highway, preserve the public's investment in highway capacity, and assure uniform design and construction of entrances and exits statewide.

A highway serves two major purposes as a part of a transportation facility. It must facilitate safe and efficient movement of people and goods and provide reasonably convenient access to the abutting property owner. Driveway regulation is intended to balance these two roles without allowing one to become a serious detriment to the other and is implemented by the Highway Work Permit review process described in this and other related publications. Available research links increased numbers and width of commercial access points and undesirable locations with increased accidents. Uncontrolled access can increase accidents, disrupt traffic flow, degrade air quality, reduce commercial viability of the corridor, result in early functional obsolescence of the facility, and require costly remedies. Good control of access can diminish these adverse impacts by minimizing points of conflict between through traffic and entering or exiting traffic and separating the highway from activities on abutting property.

The Highway Work Permitting process, which governs access from individual properties to State highways, begins when an application for a highway work permit is filed. To achieve a desired balance between the mobility and access functions of the State highway system, localities should join with the Department in looking beyond individual driveways and developments and apply a corridor or subarea perspective by coordinating access and land use control decisions.

The Department meets with local planning boards and other local officials and works pro-actively to increase public awareness about access control safety and mobility concerns. Through local officials, the Department encourages developers to apply for a highway work permit at a time early enough in the local process that both local land-use and access control concerns can be addressed in a coordinated fashion. The Department, local officials, and developers all benefit from this coordinated approach since it improves safety and mobility and reduces the potential for design changes.

A desired approach is for the local governments and Department to coordinate their respective decision-making processes when applicable and appropriate. One method of improving coordination is through the Department's Arterial/Access Management Initiative. The initiative is a collaboration between the Department and local governments which focuses on melding transportation and land-use management strategies to preserve and enhance mobility while promoting development along uncontrolled access facilities. A consistent recommended approach is to utilize the State Environmental Quality Review Act (SEQR) coordinated review process (See Section 5A.2.2.3 of this policy). Successful application of these efforts will allow for a more orderly and comprehensive consideration of transportation and access needs and may facilitate the accommodation of individual highway work permits.

The Department, through the Highway Work Permitting and SEQR processes, identifies impacts on State highways that would occur from proposed developments. As a condition of the Highway Work Permit, the Department requires developers to mitigate significant adverse traffic impacts on State highways caused by the permitted development. The Department recognizes the importance of development to local and regional economies and is committed to assisting developers and local governments coordinate the Highway Work Permitting process with the SEQR process.

The provisions, guidelines, standards, and procedures set forth in this publication are consistent with those for Department work and represent the official policy of the Department of Transportation governing driveway, walkway, and stairway entrances to State highways and shall become effective January 1, 2004, thereby superseding previous policy and standards adopted for these same purposes.

While this policy is intended to provide statewide uniformity, Department personnel responsible for access control will exercise judgement to provide the most effective and practical degree of access control. The Department of Transportation shall be the sole authoritative interpreter of the content and intent of this publication.

5A.2 GENERAL POLICY FOR THE DESIGN OF ENTRANCES TO STATE HIGHWAYS

5A.2.1 Non-Department Projects / Highway Work Permits

This section does not apply to Department projects. Highway work permits for entrances to State Highways are subject to the following conditions and limitations:

5A.2.1.1 Access to a State Highway

Any person, institution, or corporation desiring permanent, improved, or temporary access to, or performing work within a State highway right of way shall obtain a Highway Work Permit from the Department of Transportation and comply with all conditions of its issuance. Any approval by the Department is contingent upon the applicant signing the Highway Work Permit application, thereby promising to complete work required by the Department as specified in the permit.

Written application for such permit (see Form PERM 33, Highway Work Permit Application for Non-Utility Work, included in the back of this policy) shall be made to the Department of Transportation through the appropriate Resident Engineer, and shall be accompanied by plans, drawings, or a sketch indicating the work proposed, including the applicable design dimensions required. Applicants for permits to undertake residential driveway, walkway, or stairway approaches to or from a State highway shall use the enclosed Residential Driveway Form to supplement form PERM 33. Applications for work permits will be accepted only from property owners or their authorized agents who will be named as principal(s) on the performance bond (if required). Certification of legal ownership or owner's authorization may be required. On approval of the application by the Department, a permit will be issued stipulating conditions under which the installation is to be performed.

If a property owner, lessee, or agent fails to comply with the terms of a permit or to obtain a permit, the Department may halt the activity for which a permit is required until adequate corrections have been made. Costs incurred by the Department in correcting failures to comply with the terms and conditions of a permit, failures to obtain a permit, or defective workmanship or materials shall be borne by the permittee or person undertaking the activity. The provisions of this policy shall not apply to entrances already in existence on December 31, 2003 or permits submitted for approval by December 31, 2003. This policy shall apply to any **new driveways, walkways, or stairways** and **improvements** within the State right of way to existing driveway, sidewalk, walkway, or stairway submitted for approval **after** December 31, 2003. Improvement is defined as one or more of the following.

- Resurfacing (excludes driveway sealant).
- Rehabilitation and reconstruction.
- Replacement of existing drainage pipe.
- A change in width, grade, or location.
- A change in traffic control (excluding the installation of stop signs).

5A.2.1.2 Mitigation

A. New Driveways

Developers of commercial property and large subdivisions may, as a condition of the permit, be required to mitigate the impacts of their development to maintain the same level of service, safety, operation, and/or other measure of traffic conditions as the affected highway(s) would experience without the development. The impacts and required mitigation will be determined, subject to Department approval, by a Traffic Impact Study (TIS) conducted by the permittee based on full build-out of the development in the estimated year of completion. The TIS should be completed in accordance with Department requirements and is subject to approval by the Department under the Highway Work Permitting process and the SEQR lead agency as a component of the SEQR Environmental Review Process.

If traditional measures do not adequately quantify traffic impacts, the Department may select alternative measures including, but not limited to, increased travel time or delay, queue lengths, lengthened duration of congestion, and air quality. At locations where the highway is at or near capacity, traffic simulation programs defining queue length and speeds may be necessary to get an accurate understanding of the generated traffic's impact and the effectiveness of the mitigation.

Entrances to large traffic generators such as shopping centers, industrial plants, etc., may require improvements on or off the highway to accommodate the increased traffic flow caused by their presence. Such improvements may include, but are not limited to, acceleration, deceleration, through, or turning lanes, traffic signals on the State highway, extended throat lengths, provision of service or access roads, and appropriate internal circulation off the highway.

Improvements, as approved or directed by the Department, to the State highway to mitigate adverse traffic impacts from full build-out of the proposed action under SEQR are required under the work permit and are the responsibility of the permittee. Where the width of the highway right of way is insufficient to permit the construction of such improvements, the property owner may be required to provide to the Department additional right of way of sufficient width to construct such improvements or downsize the project such that the necessary mitigation can be accommodated within available right of way.

Mitigation of full build-out traffic impacts should be completed to the satisfaction of the Regional Traffic Engineer before opening of the development, unless phasing of work is allowed by the Department with adequate controls to assure the performance of future work.

Where strict application of this policy to new or improved driveways may create a severe economic hardship for the property owner, the Department may, at its discretion after an engineering review, grant exceptions to this policy where such exceptions are not likely to interfere with efficient and safe flow of traffic on the highway. In any event, the Department will be the sole authority for approving impact mitigation proposals.

B. Existing Driveways

Whenever a change or expansion of a business or other land use is expected to increase traffic flow on the State highway system through an existing driveway, it may be necessary for the owner to mitigate the impact of the increased traffic by improving the driveway and/or highway. Highway and driveway improvements may include, but are not limited to, driveway relocation or closure, signal installation or modification, and/or widening needed for the safe and efficient flow of traffic. The Regional Traffic Engineer may, in the interest of public safety, authorize restrictions on movements into and/or out of the driveway if the necessary improvements are not completed.

5A.2.1.3 SEQR Coordination

The Department will not issue a Highway Work Permit until all the SEQR requirements are met. The coordination of the two processes (Highway Work Permit and SEQR) is critical; however, the timing can lead to problems. The SEQR process is usually completed (sometimes months) before a permittee's application for a Highway Work Permit is submitted to the Department. If there has been no coordination between the local government and the Department during the SEQR process, delays can arise during the Highway Work Permitting process. To avoid unnecessary delays and problems, the following suggestions are offered.

- Local governments should notify the Department as early as possible when considering access to a State highway.
- SEQR lead agencies should invite and encourage early Department involvement to identify impacts. A coordinated review should be pursued. A coordinated review is defined by the SEQR Handbook as, "The process by which all involved agencies cooperate in one integrated environmental review."
- Lead agencies should consider the merits of the Scoping Phase of the SEQR process particularly when dealing with complex developments involving several agencies and impacts. It is during the scoping phase that involved agencies have an opportunity to express their data and information needs, concerns, and expectations. Scoping, if done correctly, can go a long way toward avoiding future confusion and unrealistic expectations.

Section 2.1 of the NYSDOT Environmental Procedures Manual discusses the Department's SEQR responsibilities. On projects requiring the issuance of a Highway Work Permit, the Department usually participates in the SEQR process as an involved agency and will:

- Issue a Record of Decision when the lead agency prepares an Environmental Impact Statement and issues a Record of Decision.
- Issue a SEQR determination when the Department is the lead agency.
- Coordinate with other involved agencies and issue a SEQR positive declaration if the lead agency has conducted an uncoordinated review processes and must prepare an Environmental Impact Statement.
- Not issue a SEQR determination on other projects.

5A.2.1.4 Arterial/Access Management Initiative

The Arterial/Access Management Initiative is a State and local collaborative process combining transportation planning and local land-use planning tools to protect the functional integrity of the highway network and provide safe and efficient access and mobility. The major elements of Arterial/Access Management include a combination of:

- Access management.
- Land use planning and controls.
- Corridor preservation.
- Transportation improvements.
- Finance techniques.

Access points are a major source of accidents and congestion on highways with abutting commercial strip development. In these areas, driveway spacing directly effects the highway's safety and functionality. Optimal driveway spacing cannot be precisely determined, but there is a consensus that driveway spacing on the order of 90 m to 150 m (300 ft to 500 ft), depending on the operating speed on the highway and the traffic generation of the development, is desirable to reduce accidents and maintain the flow of traffic. Achieving desirable spacing is particularly important on congested highways with existing or emerging commercial and retail development. It may be impractical to achieve desired spacing due to limited lot frontages, existing driveways and site constraints; nonetheless efforts should be made to improve driveway spacing even if the desired values cannot be attained.

Driveway spacing can sometimes be improved by consolidating the access to multiple sites. These and other access management techniques are typically implemented over time in cooperation with local government as a part of local access management plans and can also be included as elements of Department capital projects. To be effective, access management plans require a high level of coordination with local government, both in the development and implementation of the plans.

For additional information, refer to:

- TRB Circular 456 *Driveway and Intersection Spacing* for a discussion of spacing issues.
- *Best Practices in Arterial Management* NYSDOT Mobility Management Bureau, 1997, for a full discussion of access management techniques that can be used to achieve more functional driveway spacing and manage the effects of land development on arterials.
- NYSDOT's Internet web site at http://www.dot.state.ny.us.

5A.2.2 Department Projects

5A.2.2.1 Project Types

On Department Reconstruction or Resurfacing, Restoration and Rehabilitation (2R/3R) contracts, the Department will alter, at its own expense, existing entrances to State highways to comply with the spirit and intent of the policy and standards herein.

On simple resurfacing projects (e.g., 1R) and other preventive and corrective maintenance projects, existing entrances are only altered if they contribute to safety or operational problems. If problems are identified, the driveway should be modified by the Department to comply with the spirit and intent of the policy and standards herein.

5A.2.2.2 Driveway Work Release

If the limit of work is extended beyond the existing highway right of way to obtain adequate driveway geometrics, the Department should attempt to obtain driveway work releases (see Form HC 199, Request for Restablishment of Approaches to Private Lands, included in the back of this policy). If the property owner refuses to sign the driveway work release, he/she should be advised that the Department will proceed with the project without reestablishing the driveway. Any future work to reestablish the driveway will be the property owner's responsibility and will require a Highway Work Permit (see Form PERM 33, Highway Work Permit Application for Non-Utility Work, included in the back of this policy).

5A.2.2.3 Walkways and Stairways

If the limit of work is extended beyond the existing highway right-of-way to obtain walkway or stairway designs that meet the applicable requirements, the Department should attempt to obtain work releases (see Form HC 199, Request for Restablishment of Approaches to Private Lands, included in the back of this policy). Any property owner who refuses to sign the work release should be advised that the Department will proceed with the project without reestablishing the walkway or stairway. Any future work to reestablish the walkway or stairway will be the property owner's responsibility and will require a Highway Work Permit (see Form PERM 33, Highway Work Permit Application for Non-Utility Work, included in the back of this policy).

5A.2.2.4 Exceptions

In cases where strict compliance with the provisions of this publication may cause severe hardship to the property owner, the Department may consider exceptions to permit existing driveway entrances to remain unaltered where this is not likely to interfere with efficient and safe flow of traffic on the highway. Driveway locations should not be altered in the field without consultation with the project designer.

5A.3 CONDITIONS AND LIMITATIONS OF HIGHWAY WORK PERMITS

This section does not apply to Department projects. Highway work permits for entrances to State Highways are subject to the following conditions and limitations.

5A.3.1 General Conditions

- Work should start within the time period specified in the permit. The permittee shall notify the Resident Engineer before work is started and when it is completed, on or before the estimated completion date. The Department may grant an extension of time if valid reasons exist for the delay.
- All work completed and materials used within the right of way shall meet the Department's current *Standard Specifications for Construction and Materials* and is subject to Department approval on a case-by-case basis.
- All work completed and materials used within the right of way shall meet the terms and stipulations of the permit. The Department will make every reasonable effort to include all required stipulations and conditions of work in the permit before the work begins. If additions or alterations to either the work or the conditions of the permit are required after work commences, written Department approval shall be secured before such additions or alterations are undertaken by the permittee.
- The entire cost of the work specified shall be borne by the permittee, his grantees, successors, and assignees.
- The permittee shall have a copy of the permit available at the site at all times during construction.
- Piped or channelized natural drainage shall not be permitted to flow onto a highway right of way unless special provisions are approved by the Department.
- The permittee shall remove all surplus materials to an area outside the right of way unless the permit provides for disposal at locations within the right of way. Excavated material from within the right of way shall be disposed of as directed by the Department.
- Mitigation work shall be completed to the Department's satisfaction before opening of any access to the State highway.

5A.3.2 Insurance

A permittee shall not hold the Department liable for any claim for damages arising from his/her negligence, or his/her contractor's negligence in operations covered by the permit. Protective liability insurance to cover the Department during the period of work within the right of way is mandatory and, with the exception of permits for major commercial driveways and subdivision streets, may be obtained from the Department at a nominal cost. Major commercial and subdivision permit applicants shall have their own protective liability insurance demonstrated by providing a Certificate of Insurance for Highway Work Permits.

5A.3.3 Inspection

The Department reserves the right of inspection by its authorized representatives of construction or reconstruction of any driveway, walkway or stairway within the highway right of way. As a condition of issuance of the highway work permit, the permittee shall reimburse the Department for the cost of on-the-job inspection in excess of one person-hour, sometimes required for major and minor commercial developments. For commercial driveways requiring more than 5 days of inspection time, the permittee may, as a condition of the permit, be required to hire a Consultant, subject to Department approval, to perform construction inspection and supervision services. These inspection agreements are detailed on the PERM 50 Form, Inspection and/or Supervision Payment Agreement for Highway Work Permits, available on the Department's Internet site at http://www.dot.state.ny.us.

5A.3.4 Performance Bonds and Deposits

A performance bond and/or a deposit (certified check) and/or a letter of credit naming the permittee as principal is required for a permit issued for various work stipulated in the permit in order to protect the Department against the cost of completing construction or correcting deficiencies. The deposit will be returned when the work is completed to the satisfaction of the Department and all conditions of the Highway Work Permit have been met. The performance guarantee and amount will be prescribed by the Department, consistent with the scope and magnitude of the work involved. A perpetual bond to assure proper maintenance of driveway elements and detention ponds essential to the proper functioning of the State highway may be required.

5A.3.5 Traffic Control and Work Site Safety

The permittee and/or contractor shall take all necessary precautions and employ appropriate methods to preserve traffic flow, prevent injury to persons, or damage to property from operations covered by the permit and shall use guide, warning and regulatory signs and safety devices in accordance with the *Title 17, Volume B of the NYCRR* (a.k.a. New York State Manual of Uniform Traffic Control Devices (NYS MUTCD)), the current NYSDOT *Standard Specifications for Construction and Materials* and other Department guidance. The Department may require the permittee to submit plans showing such precautions, methods, and traffic control devices. The Department may, as a condition of the work permit, impose work restrictions as necessary to minimize disruption to traffic flow during peak travel periods. In all cases, the Department will be the final authority in matters related to maintaining and protecting traffic. The Regional Traffic Engineering & Safety Group shall issue orders for all regulatory traffic control devices such as traffic signals, stop, yield, and one-way signs. The Department shall file such orders with the Secretary of State. Questions on interpretation of the NYS MUTCD should be referred to the Resident Engineer or Regional Traffic Engineer.

5A.3.6 Maintenance Responsibility

Property owners having access to a State highway shall be fully responsible for maintenance of their driveway and channelization including the portion from the highway right of way line to the outside edge of the highway shoulder or curb. This maintenance responsibility includes removal of snow and ice and keeping the portion within the highway right of way in a safe condition for the general public. Where the owner of a commercial property is required to construct acceleration, deceleration, or turning lanes on the State highway, the Department may, in the interest of public convenience, provide routine maintenance and remove snow and ice on the portions of these lanes constituting an integral part of the State highway. This in no way absolves the property owner of the overall maintenance responsibility for the reconstruction and major repair of these lanes, if necessary.

The property owner shall be responsible for the maintenance of ditches, pipes, catch basins, grates, detention ponds, and other drainage structures constructed in connection with providing access to his property, unless other legally binding arrangements, acceptable to the Department, are made. All traffic control devices, such as traffic signals, stop and yield signs, one-way or other regulatory signs, pavement markings, delineators, etc., installed by the property owner in the highway right of way with the permission of the Department, shall conform to the NYS MUTCD and, with the exception of traffic signals, be maintained, energized, and replaced by the property owner. Traffic signals installed by the permittee are maintained by the Department for an annual maintenance fee. The Department may, in the interest of public safety or convenience, maintain pavement marking installed by the permittee on the highway. The property owner shall also trim brush and maintain his/her property in such a manner as to maintain optimal sight distance. A maintenance agreement requiring the owner and his/her successors to maintain the above features specified should be filed with the deed in the County Clerk's office.

5A.3.7 Permit Traffic Signals

To provide safe and expedient movement of traffic to and from a commercial driveway, it may be necessary to install or modify a traffic signal on the State highway. If such traffic signal is at a private road or driveway, it shall be installed, and the energy costs to operate it shall be paid, by the property owner under the terms of a Permit to Install and Operate a Traffic Control Signal on State-Owned Property, issued by the Regional Traffic Engineer. The Department will operate and maintain the signal for an annual fee to be charged to the permittee as specified in the permit. Operation and maintenance of signals erected prior to April 1, 1986, may, at the Department's discretion, be done by the permittee under the terms of the existing maintenance agreement or by the Department for an annual fee. If a traffic signal is to be modified, it may be necessary to obtain a highway work permit as well as a permit for the signal modification.

5A.3.8 Other Traffic Control Devices

If deemed necessary by the Department, other traffic control devices such as flashing signals, regulatory and warning signs, delineators, pavement markings, etc., shall be installed by the permittee on commercial driveways in accordance with the NYS MUTCD. Questions on interpretation of the NYS MUTCD should be referred to the Resident Engineer or the Regional Traffic Engineer.

5A.4 GENERAL DESIGN REQUIREMENTS, AND GUIDELINES

The following general design requirements apply to all types of entrances. The design requirements set forth in this section are intended to maintain traffic service and safety on the roadway and convenience for the traveling public and the permittee and are based on the premise that the rights of highway users and abutting property owners can be mutually satisfied. The Department reserves the right to impose any additional requirements it deems necessary for public safety.

A driveway or a driveway system shall be so located as to provide:

- The most favorable vision (sight distance), and horizontal and vertical alignment conditions for users of the proposed driveway and the highway.
- No undue interference with nearby driveways, intersections, interchanges, and turning or acceleration and deceleration lanes.
- Maximum safety and convenience for vehicles, cyclists, pedestrians, and other users of highway right of way.
- Consistency with driveway spacing standards presented in this section.
- Consistency with any local adopted driveway spacing standards or arterial corridor management plan.

In the interest of public safety and traffic flow and convenience, the Department may restrict the placement of a driveway to a particular location along the owner's frontage, restrict the type of access, or require shifting of an existing driveway. When a property fronting on a State highway also fronts on and has access to any other public street, road, or highway that intersects the State highway, the Department may restrict access to the State highway if it determines that such access would be detrimental to the safety and/or operation of the State highway.

5A.4.1 **Spacing**

The following instructions are provided to help locate new or reconstructed driveways for a particular site. More detailed requirements and guidance are provided in Figure 5A-1 (in the back of this policy). The Department may modify this distance if an engineering determination indicates another dimension is more suitable for a particular site. The Department may restrict or prohibit specific movements if it determines that such movement(s) will interfere with safe and efficient traffic flow within or near an intersection.

Refer to Section 5A.2.1.4 of this policy for information on access management for land use planning and the development of multiple sites along a highway.

5A.4.1.1 Spacing from Ramps, Auxiliary Lanes, and Transitions

Permits will not be issued for entrances to State highways along acceleration or deceleration lanes, and lane tapers. The Department also prohibits construction of a driveway near expressway or other limited access highway ramps. To enforce this policy, the Department may purchase the owner's right of access to a public highway. Refer to NYSDOT *Highway Design Manual* Chapter 6 for specific access control limits at interchanges.

5A.4.1.2 Location Within Frontage

A driveway should be located entirely within the applicant's frontage, with spacing as per Figure 5A-1 to intersections and driveways serving adjacent properties. If the driveway extends onto adjoining property or is to be shared with other property owners, the permittee may be required to provide written agreement with the adjoining property owner(s).

5A.4.1.3 Number of Driveways

Normally only one driveway shall be permitted for each residential property, minor commercial, and subdivision. An additional driveway may be permitted by the Department if both sufficient frontage exists and extenuating circumstances justify a second driveway.

5A.4.2 Sight Distance

Inadequate sight distance or other safety or operational deficiencies may require that one-way or turn restrictions (e.g., no left turns) be imposed at the driveway.

5A.4.2.1 Intersection Sight Distance

Intersection sight distances should meet or exceed the values in Chapter 9 of AASHTO's latest *A Policy on Geometric Design of Highways and Streets*. Intersection sight distance at a driveway allows the drivers of approaching vehicles a sufficient view of the highway to decide when to enter the intersection to avoid collisions. Use of signals, turn restrictions, and/or acceleration lanes can mitigate nonconforming intersection sight distance. Lower sight distance values may be used if the Regional Traffic Engineer determines that they will not significantly degrade traffic safety and operations and there is no reasonable alternative.

5A.4.2.2 Stopping Sight Distance

Driveways should be located where the stopping sight distance meets or exceeds the values in AASHTO's latest *A Policy on Geometric Design of Highways and Streets*. Where the stopping sight distance is nonstandard, consider turn restrictions and/or speed change lanes (i.e., acceleration and deceleration lanes) as mitigation, and, if practical, locate the driveway for optimal sight distance.

5A.4.3 Median Openings on State Highways

Avoid median openings on divided highways for left turns to and from residential or commercial driveways. Existing median openings may be closed by the Department if it best serves the safety and operation of the State highway. The Department may, at its discretion, permit median openings to serve major commercial driveways if justified by a traffic engineering study. New median openings must be designed to mitigate operational and safety impacts. Refer to NYSDOT Highway Design Manual Sections 3.2.8.2, 3.2.8.3, and 5.10.6 for guidance on median treatments.

5A.4.4 Driveway Profile

5A.4.4.1 Profile Within Highway Edge of Pavement

All driveways shall be constructed to slope away from the edge of the travel lane at the same slope as the highway shoulder which normally varies in slope from 2% to 6% (0.25 in/ft to 0.75 in/ft).

5A.4.4.2 Profile Beyond Highway Edge of Pavement

The profile beyond the highway edge of pavement is controlled by the:

- Drainage needs, discussed in Section 5A.4.5.
- Maximum grades provided on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2). Where special circumstances require steeper driveway grades, contact the NYSDOT Traffic Engineer for assistance in establishing a safe profile design.
- Minimum vertical curve to accommodate the design vehicle. Whenever the driveway grade changes, the profile should be rounded by connecting the two different grades with a smooth vertical curve. Abrupt changes in driveway grade near the highway may cause operational and safety problems. Driveway profiles should prevent vehicle undercarriage damage and facilitate entering and exiting maneuvers. Refer to NYSDOT *Highway Design Manual* Chapter 3 for a graphical method of checking the driveway profile for compatibility with passenger vehicles.
- Sidewalk requirements, if applicable.

5A.4.5 Drainage

A driveway shall not adversely affect the highway drainage or drainage of adjacent properties. Drainage and the stability of the highway subgrade shall not be impaired by driveway construction or roadside development. The drainage design of a construction project shall not be compromised by field adjustments to compensate for altered driveway location. In no case shall the construction of a driveway cause water to flow across the highway pavement, pond on the shoulders, or pond in the ditch.

5A.4.5.1 Highway Drainage Ditches and Driveway Culverts

Where construction of a driveway necessitates crossing a highway ditch, a culvert pipe of adequate capacity shall be installed in the ditch. The low point of the driveway profile shall be at or close to the centerline of the pipe to direct runoff (flowing from the highway and adjacent property) into the ditch.

Driveway side slopes within the highway clear zone defined by the Department should be as flat as practical. Side slopes within the highway clear zone shall be:

- No steeper than 1 vertical on 6 horizontal for driveways on highways with operating speeds or design speeds of 80 km/h (50 mph) or greater.
- No steeper than 1 vertical on 3 horizontal for driveways on highways with operating speeds or design speeds of less than 80 km/h (50 mph).

Where there is a drainage ditch along the frontage, delineation (e.g., pavement markings, delineators, signs, curbing) should be provided to guide motorists to the driveway and away from the ditch.

Culvert pipe shall:

- Be adequate to carry the anticipated flow in the ditch per NYSDOT *Highway Design Manual* Chapter 8.
- Not be smaller than 375 mm (15 in) inside diameter, except in extreme conditions where the Department may approve a pipe with a 300 mm (12 in) inside diameter.
- Have structural material and gauge adequate to withstand the load from anticipated vehicular traffic across the driveway.
- Have tapered or flared pipe end sections, instead of head walls, within the highway clear zone defined by the Department. Pipe end sections shall meet current Department design policy in NYSDOT Engineering Instructions, Engineering Bulletins, and *Highway Design Manual* Chapter 10.
- Have a length determined as the sum of the width of the driveway and any driveway median measured along the ditch center line and the length needed to accommodate the side slope from the driveway surface to the top of the pipe.

5A.4.5.2 Curbing

Existing curbing may be saw cut to provide a driveway opening conforming to NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5). Where drainage is carried along the curb, the driveway profile should be constructed with a short upgrade beyond the highway edge of pavement to prevent highway runoff from spilling onto private property. Where a short upgrade is not practical for residential and minor commercial driveways, a dropped curb, as shown on NYSDOT Driveway Standard Sheet M608-7 (Figure 5A-3), should be considered to divert a portion of the runoff being carried along the curb. Grate inlets and slotted inlets (pipe interceptor drains) to a stormwater system may also be considered.

Where an existing curb opening is no longer needed for access, new curbing, matching the adjacent curbing, should be installed.

5A.4.5.3 Drainage for Driveways With Nonconforming Profiles

Driveways with a continuous down grade from the highway may channel stormwater runoff from the highway onto private lands. Where profile adjustments are not practical, consideration should be given to providing gutter sections with grate inlets or slotted inlets (pipe interceptor drains) to a stormwater system.

Driveways with a continuous down grade to the highway may channel stormwater runoff from the private lands onto the highway. Where profile adjustments are not practical, consideration should be given to grate inlets or slotted inlets (pipe interceptor drains) to a stormwater system. A pipe with a top opening is impractical in dirt or gravel driveways or where debris may clog the opening or the pipe.

5A.4.5.4 Highway Work Permits

This section does not apply to Department projects. Highway work permits for entrances to State Highways are subject to the following conditions and limitations.

Ditches, gutters, and/or pipes on private property shall not drain into the highway drainage system unless expressly approved by the Department. Under no circumstances shall existing highway ditches or gutters be filled by the permittee without adequate provision for alternate drainage.

The Department may require the permittee to submit a drainage study, signed by a New York State Licensed Professional Engineer, justifying the drainage system proposed and pipe sizes used. A drainage study is normally required for commercial and subdivision driveways, especially for developments with large parking areas. Drainage studies requirements are discussed in NYSDOT's *Highway Design Manual* Chapter 8, Section 8.9.

5A.4.6 Sidewalks, Walkways and Stairways

All sidewalks, walkways, and stairways shall be constructed consistent with NYSDOT *Highway Design Manual* Chapter 18. Whenever a sidewalk or other pedestrian facility that intended to be used by the public is constructed, altered, added to, or restored, access for persons with disabilities shall be provided in accordance with the *Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities*.

Sidewalk Requirements:

- Sidewalk cross slope shall not exceed 2% (0.25 in/ft).
- Sidewalk grade shall not exceed the grade of the adjacent parallel highway.
- Ramped sidewalk sections across the driveway opening shall not be steeper than 8.3% (1 in/ft), unless it is technically infeasible due to terrain or other site constraints.
- Where sidewalks are provided to serve the public, curb ramps with detectable warnings shall be provided where pedestrian access routes cross curbs. Refer to the NYSDOT Standard Sheets for sidewalk curb ramp and detectable warning details.

Sidewalk Guidelines:

- Where a sidewalk is located close to the curbline and the driveway opening is a taper-type (see NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-3)) or the curb drops at the sidewalk, the sidewalk should be warped to conform to the driveway profile provided the sidewalk will meet the above requirements. This may depress one or both edges of the sidewalk across the driveway.
- It may be necessary to discontinue the sidewalk across the driveway and construct a curb with curb ramps along each driveway edge or to provide convenient alternative access for persons with disabilities.
- In urban areas, it is aesthetically desirable for the sidewalk to have a profile that is as consistent as practicable.

5A.5 RESIDENTIAL DRIVEWAYS AND FIELD ENTRANCES

Residential driveways and field entrances are defined in Section 5A.10 of this policy. They should be designed to permit access without unduly affecting traffic on the highway. Home business driveways and small subdivision driveways can, at the discretion of the Department and based on site specific conditions, be designed as either residential or minor commercial driveways, but should be wide enough to permit two-way traffic. Larger subdivision driveways may require a design typical of a major commercial driveway or an intersection.

For Department projects, refer to Section 5A.9 of this policy for instructions on the preparation of the Driveway Table and its use with NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5).

For highway work permits, complete the PERM 33 and the Residential Driveway Form included at the end of this policy.

5A.6 MINOR COMMERCIAL DRIVEWAYS

Minor commercial driveways are defined in Section 5A.10 of this policy. They should be designed to permit access without unduly affecting traffic on the highway. Refer to Section 5A.9 of this policy for instructions on preparing the Driveway Table and its use with NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5).

Minor commercial driveways that will routinely need to accommodate vehicles larger than AASHTO's Single Unit (SU) design vehicle are to be designed as major commercial driveways in accordance with Section 5A.7 of this policy. Examples include marinas, recreational areas, mobile home sales, modular home sales, and truck stops that do not meet the traffic volume of a major commercial driveway. In these cases, the Department may waive the Traffic Impact Study requirements in Section 5A.7.5. Where the oversized vehicle enters only occasionally, the driveway may be considered a minor commercial driveway provided the area that will need to accommodate the larger vehicle is either:

- Stabilized using gravel, stone, or other suitable material for uncurbed driveways or,
- A 100 mm (4 in) mountable or traversable curb is used and backed with asphalt concrete for curbed driveways.

5A.6.1 **Access Control**

Frontage of all commercial properties shall be controlled by positive means such as curbing or ditches which limits access to designated driveways. The purpose of the access control is to direct entering and exiting vehicles into a well-defined flow pattern and separate traffic movements on the private property from the highway traffic. This will provide maximum safety for motorists and minimize interference between traffic on the highway and on the property. Refer to Figure 5A-1 (at the back of this policy) for specific requirements and guidance.

5A.6.1.1 Driveway Configuration

The selected driveway configuration should minimize impact to the State highway. Intersection channelization islands may be used to separate entering from exiting traffic or to separate turning movements at driveway exits. Channelization islands are a portion of the intersection area (delineated using pavement markings, curbing, turf, or plantings) to physically delineate traffic movements. They shall be designed in accordance with NYSDOT *Highway Design Manual* Chapter 5, Section 5.9.4.

Minor commercial driveways may also use:

- Two-way drives.
- Two-way drives separated by an driveway island.
- One-way drives separated by an driveway island.
- One-way drives separated by a driveway median.

Driveway islands and medians are the areas between separated driveways to the same property.

- A driveway island is a raised area for separating multiple entrances or to place entering and exiting traffic at separate locations. Driveway islands also separate highway traffic from the activity on private property. Driveway islands have a minimum width (measured along the edge of highway) of 9 m (30 ft). They allow the separated entrances and/or exits to be treated as separate intersections with respect to traffic control.
- A driveway median is a narrow raised or physically separated area between the driveway entrance and exit to separate entering and exiting vehicles. Driveway medians are 1.2 m (4 ft) to 4.9 m (16 ft) wide. Driveway median widths between 4.9 m (16 ft) and 9 m (30 ft) should be avoided as they can confuse motorists when traffic control devices are used. The raised or physically separated areas normally extend the length of the driveway throat (defined below), minus any distance needed for the turning path of the design vehicle.

For one way roadways and highways with a raised or depressed median, mid-block driveways should be designed to accommodate rights in and rights out only. A raised channelization island or driveway median may be preferred in a two-way driveway opening to discourage wrong-way movements.

For highways without a raised median, a single two-way drive is preferred in most cases since one-way drives may be driven the wrong way and driveway medians may be hit by errant vehicles.

If two commercial driveways or driveway halves to the same property are constructed with less than 23 m (75 ft) between adjacent driveway openings, the entire shoulder area between the driveways shall be replaced with adequate traffic bearing material and, if operating speeds or the design speed on the highway is below 80 km/h (50 mph), the entire area between driveways shall be curbed (with drainage openings as necessary).

5A.6.1.2 Driveway Throat

The driveway throat is an access controlled portion of the driveway entrance that helps delineate the driveway and provides space to store entering and exiting vehicles. The access control between the parking areas and the edge of the driveway throat should be achieved using curbing, wide turfed areas, shrubs, median barrier, or other physical means (i.e., pavement markings and signs are not enough). The length selected for a particular driveway (measured along the driveway centerline) should be based on the operational, safety, and construction costs. The entrance should allow all entering traffic to pull off the highway before stopping. The exit throat length should prevent exiting vehicles from obstructing entering traffic, which could cause entering traffic to queue back onto the highway. The driveway throat should extend beyond the highway right of way line, if necessary.

5A.6.1.3 Clearances And Use of State Property

In rural and suburban areas, a minimum of 4.6 m (15 ft) should be provided between the right of way line and the near edge of a building, structure, or appurtenance serving vehicular traffic, exclusive of overhead appurtenances such as luminaires or canopies over gas pumps. This offset shall be sufficient to preclude the servicing and parking of vehicles on State property.

For sites where the property owner has been using State owned right of way for parking or other purposes, imposing standard driveway controls may create an economic hardship. In such cases, the property owner may be required to obtain a Permit for Use of State Owned Property from the Regional Real Estate Officer in accordance with the Department Manual of Administrative Procedure 7.12-2 and the Real Estate Division directives.

5A.6.2 Constrained Areas

The radii and taper-type minor commercial driveway designs in NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5) were determined using AutoTurn software. The software modeled the sharpest possible turning path of a Single Unit Truck turning to and from the minor commercial driveway.

On Department projects when the driveway opening cannot be reasonably modified to meet the requirements in the NYSDOT Driveway Standard Sheets, the driveway shall be individually designed. The proposed design shall be checked using the turning path of the design vehicle. If the design vehicle cannot be accommodated without encroachment, the driveway should be documented as a nonconforming feature with an explanation in the project files.

In urban areas, a minimum offset of 1.2 m (4 ft) shall be provided from the shoulder or sidewalk to parking areas to prevent parked cars from overhanging into the shoulder or sidewalk. The Department may allow a single line of curb or barrier to be used only in constrained locations where a 1.2 m (4 ft) or more width cannot be installed and where it will not be a roadside hazard.

5A.6.3 Highway Work Permits

This section only applies to highway work permits. Refer to Form PERM 33 for the Highway Work Permit Application at the end of this policy. In addition, minor commercial driveway permit applications are to be accompanied by a completed Driveway Table and a plan as specified in Section 5A.6.3.1 of this policy. All plans or drawings submitted by the applicant shall be prepared, signed and/or stamped by a New York State licensed design professional (Engineer, Architect, Landscape Architect, or Land Surveyor).

5A.6.3.1 Plan Details

The plans shall include the following. (Plans for many minor commercial developments, as well as all major commercial developments require this information for the Department to render a proper review.)

- North directional arrow.
- Location and dimensions of existing highway pavement, curbs, guide rail, medians, sidewalk, stairways, bike paths, bike lanes, bus stops, utilities, traffic signs (include the sign text), signals, pavement markings, and right of way and property lines.
- Existing and proposed buildings and appurtenances.
- Design features to be incorporated in proposed construction or reconstruction:
  - Edge of driveway
  - Driveway grades or profile view of driveway.
  - Location of proposed median openings and guide rail.
  - Dimensions of roadside islands and driveway medians.
  - Dimensions and elevations of curbs and sidewalks relative to the pavement edge.
  - Location of authorized traffic signs, pavement markings, and proposed advertisement signs.
  - Locations of walkways and stairways.
- Existing and proposed drainage features and a report addressing their impacts:
  - Size, type, and grade of driveway culverts.
  - Highway drainage structures.
  - Direction of surface water flow on applicant's property.
- Distance from each existing and proposed driveway on the site to:
  - The nearest side road in each direction if within 300 m (1000 ft).
  - Nearest driveway on adjacent properties.
  - Streets, roads, or driveways opposite the site.
  - Adjacent property lines.
  - Beginning and ending reference markers.
- Provisions for maintaining safe traffic flow, pedestrian access and work site safety during construction and any work or work space restrictions required by the Department to minimize traffic impacts during peak traffic flow periods. The Department will recommend lane closing restrictions. Nighttime lane closures require our prior approval.
- Traffic signal plans must be shown on a separate sheet including pavement markings, turn lanes, driveways, sidewalks and pedestrian ramps, crosswalks, buildings, poles, power supply, pullboxes, conduit, controller, head layout including face numbering, detection, right-of-way lines and signing. All work must be referenced to the latest edition of the NYSDOT *Standard Specifications Construction and Materials*. The plans must show existing features, such as drainage and utilities, which may conflict with the proposed signal. Tables of Operations, Clearances, Switchpacks, Input Wiring and Loop Wiring must be included along with a Phasing Diagram and Estimate of Quantities.

The Department may require additional information (e.g., cross sections) as site-specific conditions warrant. An aerial photograph of the site is desirable.

The NYSDOT *Highway Design Manual* Chapter 21 and the NYSDOT *CADD Standards and Procedure Manual* may be used as a guide for the development of plan sheets. Upon completion, the Department will normally require as-built drawings for archival purposes.

5A.6.3.2 Plan Units

The Department uses the metric system of measurement. While the Department may, at its discretion, continue to accept U.S. Customary units, it may require metric design, especially where changes to the State highway necessitate revisions to the Department's record plans. Applicants should contact the Department early to determine the system of units to be issued.

AASHTO's latest *A Policy on Geometric Design of Highways and Streets* contains U.S. Customary and metric units. The NYSDOT *Highway Design Manual* is metric only with the exception of Chapter 4, which has both metric and U.S. Customary units. The NYSDOT Standard Sheets and the NYSDOT *Standard Specifications for Construction and Materials* are metric only. The *Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities* contains U.S. Customary and metric units.

5A.7 MAJOR COMMERCIAL DRIVEWAYS

Major commercial driveways are defined in Section 5A.10 of this policy. Major commercial driveways and highway improvements should be designed to accommodate expected directional traffic volumes and the type of vehicles expected to use them. The resulting design could range from one typical of a minor commercial driveway to one based on high-type intersection design principles.

The Department may allow major commercial driveways to use the radii Type 1 or Type 2 minor commercial driveway details shown in NYSDOT Driveway Standard Sheet M608-7 (Figure 5A-3). Taper-type driveways are not to be used. Entering speed, volume, pavement thickness, and design vehicle must be considered since the minor commercial driveway designs are intended for moderate volumes and AASHTO Single-Unit (SU) design vehicles. Major commercial drives that will use the Type 1 or Type 2 driveway details are to be tabulated in the Driveway Table in accordance with Section 5A.9 of this policy and may employ minor commercial driveway design details shown in NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5).

Other major commercial drives are to be tabulated separately, and detailed individually in the plans similar to a highway intersection with a cross street. **The following sections are to be followed in addition to, or as an exception to, the requirements in Sections 5A.4 and 5A.6 of this policy and NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5).**

5A.7.1 Traffic

The driveway and any other required highway improvements shall be designed in accordance with the intersection design guidance in NYSDOT *Highway Design Manual* Chapter 5 and AASHTO's latest *A Policy on Geometric Design of Highways and Streets*.

5A.7.1.1 Design Vehicle

The design vehicle shall be selected in accordance with NYSDOT *Highway Design Manual* Chapter 5 and AASHTO's *A Policy on Geometric Design of Highways and Streets*. The design vehicle should represent the largest type of vehicle expected to routinely use the driveway and is subject to Department approval. Industrial and commercial driveways used by large trucks should have adequate width, radii and pavement thickness to accommodate the appropriate design vehicle. The Department may require driveways on designated qualifying or access highways or within 1.6 km (1 mi) of a qualifying highway to be designed to accommodate the AASHTO WB-20 (WB-67 U.S. Customary) design vehicle, if such vehicles are expected to use the driveway.

The Department may require reconstruction of affected highways, interchanges and/or intersections, if the development will generate larger vehicles than the affected highway system is designed for.

5A.7.1.2 Level of Service

Major commercial driveway widths shall provide adequate capacity and design vehicle turning paths that do not interfere with other traffic movements. Multiple lane exits and entrances may be required to maintain the highway level of service. The level of service should be determined in accordance with NYSDOT *Highway Design Manual* Section 5.2.

5A.7.2 Layout

The driveway design should prevent the need for undue deceleration in a travel lane and preclude turning vehicle encroachment on adjacent highway and driveway travel lanes by the largest vehicle expected to routinely use the driveway. The minor commercial driveway layouts in NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5) were developed to accommodate an AASHTO Single-Unit Truck and should not be used for larger design vehicles. Large vehicles and/or high speeds should not be accommodated by using driveway widths in excess of those permitted by Table 1 on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2). The three-centered curves in AASHTO's latest *A Policy on Geometric Design of Highways and Streets* can accommodate large vehicle turning paths while minimizing driveway openings. An exception to the widths in Table 1 on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2) may be granted by the Department for special cases (e.g., when a wider drive is required for a fire department entrance or for oversized vehicles).

5A.7.3 Corner Angle

The corner angle between the driveway centerline and the highway travel lane edge is determined by terrain, safety, and operational requirements. The corner angle shall be between 60° and 120°.

A corner angle of 90° should be used for two-way drives. Acute angle turns require significant reductions in travel speed and pose difficulties for trucks. Since flatter angles tend to encourage higher operating speeds, consider perpendicular driveways where pedestrian traffic is a concern.

A corner angle between 60° and 120° is permissible for one-way drives. Angled or one-way driveways may be considered where access is limited to right turns in and out. Consider angles flatter than 90° to facilitate the entrance of substantial truck traffic into through traffic on the highway.

5A.7.4 Material

All major commercial driveways shall have a paved surface extending from the edge of the travel lane to the highway right of way line or for 3 m (10 ft), whichever is greater.

The material and thickness of commercial driveways within the highway right of way shall be designed to provide adequate support for the volume and character of traffic using the driveway. The existing highway shoulder material shall be removed, if required by the Department, and the shoulder area paved with adequate driveway material, if determined necessary by the Department. In the nontraffic bearing areas of commercial entrances, use of loose stone such as pea gravel as a mulch or for decorative effect shall not be allowed without a suitable binder.

The material information shall be shown on the plans or drawing accompanying the permit application and shall be subject to review and approval by the Department. Under no circumstances may the material thickness be less than that provided for a similar minor commercial driveway using Table 3 on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2).

5A.7.5 Highway Work Permits

This section only applies to highway work permits only. Refer to the attached PERM 33 for the Highway Work Permit Application at the end of this policy. In addition, major commercial driveway permit applications are to be accompanied by a 1:250 (1 in = 20 ft) or 1:500 (1 in = 40 ft) scale (as specified by the Department) plans or drawings indicating the items in Section 5A.6.2.1 of this policy and:

- The driveway width, pavement type, and thickness.
- Radii of driveway returns and other points of curvature.

The **Traffic Impact Study (TIS)** shall include details of internal vehicular, transit and pedestrian traffic circulation, parking, traffic control devices, actual and estimated traffic volumes, and any proposed additional pavement lanes or widening on the highway.

As a modification to the requirements in Section 5A.6.2, the plans and TIS shall be prepared by a **New York State Licensed Professional Engineer**. Additionally, the Department may require a ledger size paper plan labeled as a revised sheet to be included with the Department's record plans.

5A.8 STREETS AND HIGHWAYS OFF THE STATE HIGHWAY SYSTEM

Streets and highways off the State highway system include:

- City and village streets.
- Town and county highways.
- Private access roads.
- Subdivision roads (defined in Section 5A.10 of this policy).
- Roads owned by other State agencies and authorities.

Entrances to State highways classified by the Department as nonfreeways from streets and highways off the State highway system, shall:

- Be designed in accordance with the intersection design guidance in NYSDOT *Highway Design Manual* Chapter 5 and AASHTO's latest *A Policy on Geometric Design of Highways and Streets*.
- Otherwise be considered as major commercial driveways per this policy, unless otherwise directed by the Department.

All entrances to State highways classified by the Department as freeways shall:

- Be designed in accordance with the intersection design guidance in NYSDOT *Highway Design Manual* Chapter 6 and AASHTO's latest *A Policy on Geometric Design of Highways and Streets*.
- Follow the procedures and requirements in NYSDOT *Design Procedure Manual* Appendix L, Interstate and Other Freeway Access Modifications.
- Otherwise be considered as major commercial driveways per this policy, unless otherwise directed by the Department.

5A.9 DRIVEWAY TABLE

Several variables for each drive must be defined in order for the contractor to construct driveways in accordance with the NYSDOT Driveway Standard Sheets M608-6 though M608-9 (Figures 5A-2 through 5A-5). These include:

1. Location — Mainline station of driveway centerline. For projects or permits without mainline stationing, include a reference (e.g., a number) to the driveway, which shall be located to the nearest 0.3 m (1 ft) on a separate plan sheet.

2. Side — "Left" or "Right" along the stationing. Use north, south, east or west as appropriate for nonstationed projects.

3. Existing Material (Asphalt Concrete, Portland Cement Concrete, Crushed Stone, Gravel, Dirt, or Grass) — The existing material is used by NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2), Table 3 Driveway Treatment: Materials & Thickness, to define the materials and thickness to be used within the pavement length (PL) and any transition length (TL), as required. Standard thicknesses are listed for both asphalt concrete and Portland cement concrete drives. If a commercial driveway requires a different thickness, the driveway should be designed as a Special Type SX as defined in item 9 of this section. The asphalt concrete layer composition is determined by the contractor in accordance with Table 608-1 of the NYSDOT Standard Specifications for Construction and Materials.

   Note: The NYSDOT Driveway Standard Sheets assume the apron (area between the sidewalk and curb on Type 3 and 4 driveways) will be paved with the same material type as the driveway. In certain situations the designer may prefer to pave all aprons with the same material regardless of the driveway material. For example, a village or city may request all aprons be concrete for aesthetic purposes. In these situations an appropriate note should be added to the Driveway Table.

4. Class (Residential (R) or Minor Commercial (MC)) — Refer to definition in Section 5A.10 of this policy.

5. Width (W) — The width (W) is defined as the proposed driveway width beyond the taper or radius entrance. This will usually be the existing width or a revised width if the existing drive does not conform to the widths in NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2), Table 1 and an exception is appropriate (e.g., when a wider drive is required for a fire department entrance).

6. Corner Angle (θ_{IN}) — The corner angle is the angle between the roadway and driveway as if turning from the roadway onto the driveway.

   Ninety degree entrances are desirable for two-way drives. Corner angles of 60^{O} to 120^{O} may be desirable for one-way commercial drives to reduce the driveway opening width. Refer to acceptable corner angle in NYSDOT Driveway Standard Sheet M608-7 (Figure 5A-3), Table 4.

   Taper-type driveways should not be used for minor commercial driveways skewed more than 10^{O} (θ_{IN} less than 80^{O} or more than 100^{O}) since the taper-type driveways require more pavement than radii type driveways and the additional pavement increases with the skew and width of the driveway opening.

   The corner angle can be used to determine the "Y_{IN}" dimension and the "Y_{OUT}" dimension of the driveway to determine the overall curb opening limits using NYSDOT Driveway Standard Sheet M608-9 (Figure 5A-5).

7. Pavement Length (PL) — Refer to the definition on Standard Sheet M608-6 (Figure 5A-2). Any appropriate paving limit, meeting the minimum pavement length (MPL) requirements on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2) can be specified in the driveway table. The material and thickness are defined in Table 3, Driveway Materials and Thickness on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2).

8. Transition Length (TL) — Refer to the definition on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2). The material and thickness are defined in Table 3, Driveway Materials and Thickness on NYSDOT Driveway Standard Sheet M608-6 (Figure 5A-2). If no transition is anticipated, the pavement length (PL) is assumed to be at a point where the existing driveway width and elevation can be matched and the TL in the driveway table should be left blank. If a transition length is anticipated, but exact limits cannot be determined in the design stage (i.e., limited survey data available), fill in the table with A.D.B.E (As Determined By Engineer). (Note: It is preferable to define the TL in the plans; use of A.D.B.E. should be avoided if possible).

9. Entrance Type — NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5) provide details for four of the most common entrance types. If only a minor modification of the standard type is required, a note similar to one of the following should be provided on the Driveway Table.

   "The drive at Sta. 3+231 Lt. shall be constructed in accordance with a Type 1 drive as shown in Figure 5A-3 of the NYSDOT "Policy and Standards for Design of Entrances to State Highways," except the driveway thickness shall be 200 mm of asphalt concrete."

   "The drive at Sta. 3+231 Lt. shall be constructed in accordance with a Type 1 drive as shown on NYSDOT Driveway Standard Sheet M608-7, or latest revision, except the driveway thickness shall be 200 mm of asphalt concrete."

Minor modifications are changes that can be conveyed by notes but do not require a special detail in the plans.

Major commercial and other driveways for which the NYSDOT Driveway Standard Sheets will not be used shall be detailed in the plans and labeled as a special drive, Type SX, where X is the detail number (i.e., S1, S2, etc.). The special type driveway details should either be site-specific with all required dimensions, or use similar dimension labels as NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5) and the Driveway Table.

10. Comments — Include additional design information, such as: curb reveal, one-way entrance, and multilane entrance.

11. Pay Items — The Driveway Table also includes a table indicating all separate pay items called out in the NYSDOT Driveway Standard Sheets M608-6 through M608-9 (Figures 5A-2 through 5A-5). The designer must fill in the project-specific Item numbers. Space has been left to add additional project specific driveway items as necessary.

5A.10 GLOSSARY OF TERMS

Refer to Figure 5A-2 for additional definitions.

AASHTO. The American Association of State Highway and Transportation Officials.

Capacity. The maximum hourly rate at which persons or vehicles can reasonably be expected to traverse a point or uniform section of a lane or roadway during a given time period under prevailing roadway, traffic, and control conditions. Refer to the most recent *Highway Capacity Manual* for more information.

Channelization. An at-grade separation or regulation of conflicting traffic movements into defined travel paths by pavement marking, raised islands, or other suitable means to facilitate the safe and orderly movement of vehicles and pedestrians.

Channelization Island. A portion of the intersection area (delineated using pavement markings, curbing, turf, or plantings) to physically delineate traffic movements.

Commercial Driveway. A driveway serving a commercial establishment, industry, governmental or educational institution, private utility, hospital, church, apartment building, or other comparable traffic generator. Types of commercial driveway designs include:

1. **Divided Commercial Driveway.** A driveway incorporating a raised median or other physical barrier to separate entering traffic from exiting traffic.

2. **Undivided Commercial Driveway.** A driveway with no physical barrier to separate entering traffic from exiting traffic.

Department. The New York State Department of Transportation.

Driveway. Every entrance or exit used by vehicular traffic to and from lands or buildings abutting a State highway.

Driveway Island. A raised area for separating multiple entrances or to place entering and exiting traffic at separate locations. Driveway islands also separate highway traffic from the activity on private property. Driveway islands have a minimum width (measured along the edge of highway) of 9 m (30 ft). They allow the separated entrances and/or exits to be treated as separate intersections with respect to traffic control.

Driveway Median. A narrow raised or physically separated area between the driveway entrance and exit to separate entering and exiting vehicles. Driveway medians are 1.2 m (4 ft) to 4.9 m (16 ft) wide. The raised or physically separated areas normally extend the length of the driveway throat (defined below), minus any distance needed for the turning path of the design vehicle. Refer to channelization islands for raised areas within the driveway intersection area to physically delineate traffic movements.

Driveway Throat. An access controlled portion of the driveway entrance that helps delineate the driveway and provides space to store entering and exiting vehicles.

Driveway Work Release. A document (attached form HC 199) signed by the owner permitting the State to enter and alter a driveway to accommodate changes of the highway alignment, grade, or cross-section in accordance with Section 54-A of the Highway Law.

Field Entrance. A driveway serving a farmyard, cultivated or uncultivated field, timberland, or undeveloped land not used for industrial, commercial, or residential purposes.

Frontage. The distance along the highway edge of pavement in front of the owner's property, measured between lines perpendicular to the centerline of the roadway from each property corner.

Highway Work Permit. A document specifying the authority and conditions under which an individual or organization may perform work within or adjacent to the State highway right of way.

Home Business Driveway. A driveway serving any business which is part of a private residence which produces actual or anticipated traffic volumes on a typical day of 20 or fewer vehicles during the hour of highest driveway activity.

Level of Service. A qualitative measure of operational characteristics within a traffic stream. Levels range from "A", representing the best operating conditions, to "F" representing traffic breakdown. Refer to the most recent *Highway Capacity Manual* for more information.

Major Commercial Driveway. Any commercial driveway where the actual or anticipated traffic volume on a typical day is either:

1. 100 or more one-way trips during the peak hour for either the adjacent roadway or the development.

   OR

2. 50 or more one-way trips during the 8th highest hour of annual driveway activity.

The traffic volumes may be determined by automatic recorders, the ITE Trip Generation Rates, or other method approved by the Regional Traffic Engineer.

May. A permissive condition. No requirement for design or application is intended.

Minor Commercial Driveway. Any commercial driveway where the actual or anticipated traffic volumes on a typical day are less than the values stipulated for a major commercial driveway.

NYS MUTCD. *Title 17, Volume B of the Official Compilation of Codes, Rules and Regulations of the State of New York* (NYCRR) and is commonly referred to as the New York State Manual of Uniform Traffic Control Devices (NYS MUTCD).

Municipal Streets and Highways. Streets and highways owned by a village, city, town, or county.

Permanent Easement. A permanent possession, by other than the landowner, of specified ownership rights to a parcel of land, usually to accommodate features that are supplementary to the highway such as drainage or slope grading. The State may acquire easements through the exercise of eminent domain.

Permittee. A municipality, public utility company, public benefit corporation (such as Water Authority), private corporation, partnership, association, or individual in whose name the permit has been issued.

Residential Driveway. A driveway serving four or fewer private homes or an apartment building for four or fewer family units.

Right of Way Line. The boundary between private property and State highway lands.

SEQR. The State Environmental Quality Review Act: Law and associated regulations governing environmental impact review of proposed actions as detailed in 6 NYCRR Part 617 of the New York Compilation of Codes, Rules and Regulations (NYCRR) and for Department actions, in 17 NYCRR Part 15.

Shall. A mandatory stipulation based on statutory or regulatory requirements.

Should. A recommended, but not mandatory condition.

Sidewalk, Walkway. An exterior pathway with a prepared surface intended for pedestrian use. Sidewalks generally parallel a roadway and are usually intended for public use. Other walkways described in this policy are generall approaches to adjoining properties and may be intended for public or private use.

Stairway. One or more flights of steps, including landings, that form a portion of a pedestrian walkway approaching lands or buildings abutting a State highway.

Subdivision Road. A road, drive, or street laid out in a developed residential area by a contractor, builder, or company responsible for developing the area. This includes a new driveway serving more than four private homes or a multiple-unit dwelling containing more than four family units.

Temporary Driveway. A driveway which provides interim access to a property until either closed or reconstructed by authority of the Department as a condition of further development of either the property or the corridor.

Temporary Easement. A temporary possession, by other than the landowner, of specified ownership rights to a parcel of land, usually to accommodate the construction, but not maintenance or operation, of the facility.

Traffic Impact Study. A study of existing traffic conditions, anticipated traffic conditions with and without the development and the traffic impacts of the development. The study should include proposed mitigation of impacts and resulting traffic conditions.

5A.11 REFERENCES

1. *A Policy on Geometric Design of Highways and Streets*, 2001. American Association of State Highway and Transportation Officials (AASHTO), 444 North Capital Street, N.W., Suite 249, Washington, D.C. 20001.

2. *Americans with Disabilities Act Accessibility Guidelines for Buildings and Facilities*, December 1993. Landscape Architecture Bureau, Design Division, New York State Department of Transportation, 1220 Washington Ave., Albany, NY 12232.

3. *Best Practices in Arterial Management*, November, 1996. Mobility Management Bureau, New York State Department of Transportation, 1220 Washington Ave., Albany, NY 12232.

4. *CADD Standards and Procedure Manual,* Design Division, New York State Department of Transportation, 1220 Washington Ave., Albany, NY 12232.

5. *Guidelines for Driveway Location & Design*, 1987. Institute of Transportation Engineers (ITE), 525 School Street, S.W., Suite 410, Washington, DC 20024-2729.

6. *Highway Capacity Manual*, 2000. Transportation Research Board, National Research Council, 2101 Constitution Ave., N.W., Washington, DC 20418.

7. *Highway Design Manual*. Design Division, New York State Department of Transportation, 1220 Washington Ave., Albany, NY 12232.

8. *Manual of Administrative Procedures*. New York State Department of Transportation, 1220 Washington Ave., Albany, NY 12232.

9. *Title 17, Volume B of the Compilation of Codes, Rules and Regulations of the State of New York* (NYCRR), a.k.a. New York State Manual of Uniform Traffic Control Devices, West Group, 620 Opperman Drive, PO Box 64833, St. Paul, MN 55164-9752.

10. *Public-Private Financing of Roadway Improvements Handbook*. Planning & Strategy Group, New York State Department of Transportation, 1220 Washington Ave., Albany, NY 12232.

11. *Standard Specifications for Construction and Materials*. Design Division, New York State Department of Transportation, 1220 Washington Ave., Albany, NY 12232.

HC 199 (8/73) NEW YORK STATE DEPARTMENT OF TRANSPORTATION

REQUEST FOR REESTABLISHMENT OF APPROACHES TO PRIVATE LANDS
(Section 54-A Highway Law)

Region #_____ State Highway # _____ Contract # _____

Town _____ County _____

The undersigned owner of private lands located on the _____ side

of station _____ and the _____ side of station _____

and being further identified as _____

hereby requests that the Department of Transportation cause the reestablishment of the entrance, approach or driveway on said lands to be adjusted to any new highway grade made necessary by the construction or reconstruction of _____

_____ State Highway No. _____

in accordance with Section 54-A of the Highway Law of the State of New York, which provides as follows:

" 54-A. Reestablishment of approaches to private lands

In the construction and reconstruction of any highway on the state's system where a substantial change in the existing grade of the highway is made, such change making necessary the reestablishment of an existing entrance or approach to private lands, the commissioner of transportation may, upon the request of the abutting property owner affected, cause the reestablishment of the entrance, approach or driveway to be adjusted to the new highway grade and the cost thereof shall be a state charge payable from any money available for the construction or reconstruction of state highways. In such adjustment the details of the work shall be as determined by the commissioner of trans-portation. The state shall not be liable for the maintenance of such adjusted and reestablished approaches or driveways beyond the outside edge of the road shoulder nor shall it be liable for damages in connection therewith after the completion of such adjustment work."

In Presence Of: Dated:_____ _____L.S.

_____ _____L.S.

_____ _____L.S.

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State of New York
Department of Transportation

Form PERM 33 (8/01)

Highway Work Permit Application for Non-Utility Work

Instructions and Form

Submit three copies (photocopies acceptable)

INSTRUCTIONS FOR COMPLETING THE APPLICATION FOR HIGHWAY WORK PERMIT – NON-UTILITY

FRONT OF APPLICATION

An Applicant may not have all pertinent information at the time of completing the application form since certain information relative to fees, insurance and guarantee deposits may be contingent upon determinations to be made by the Department. In such cases, the information may be left blank and remittance withheld until the information is determined by the Department.

Please complete the following:

- Permittee's name and address. For more than one applicant, also fill in the joint applicant's name and address.
- Federal Identification Number of the company or individual Social Security Number.
- Applicant's telephone number. A telephone number where applicant can be contacted concerning the application. Please include area code.
- Project Identification No. and Highway Work Permit No. will be completed by the issuing office.
- Name of Contact person and their telephone number in case of emergency.
- If Highway Work Permit is to be returned to someone other than the applicant, complete this section.
- Estimate the cost of work being performed in the State highway right-of-way and place this figure on the blank line.
- Indicate anticipated duration of work to be performed with starting date and ending date on this line.
- You may provide your own insurance, purchase insurance through the Department, if available, or provide an Undertaking (for Utilities and Municipalities only). If you choose to provide your own insurance, a PERM 17 will be necessary. The PERM 17 may be obtained at the office you obtained this form from. It must be completed by your insurance company and accompany the permit application upon submission. The Policy number and expiration date of the PERM 17 should be shown on this line.
- Give a brief description of the proposed work that is to be done under this permit
- Plans and specifications should accompany this application for any work that involves construction within the State highway right-of-way. Place a check mark on the lines for plans and specifications if they are attached.
- Location of the project should be identified by: State Route; State Highway Number, if known; State Highway reference markers and Town and County in which work area is located.
- SEQR requirements: This may be required for larger projects – Contact the Regional Office of the Department of Transportation to determine if these requirements are necessary.
- Signature of applicant (permittee) and date.
- Signature of second applicant, if any, and date.

BACK OF APPLICATION

- Check type of work that will be performed.
- In the appropriate column indicate:
  - Manner in which insurance coverage is furnished the Department, i.e., PERM 17 (P17) or Under-Taking (UT) or Insurance Fee (IF), if available (N/A means the Department's insurance is not available).
- Indicate total amount of permit fee and insurance fee, if applicable.
- Indicate check number of Guarantee Deposit or Bond Number, if required. This will be determined by the Department upon submission of application.

Shaded areas will be completed by the Department of Transportation.

Remove the application form from the back of this packet and submit 3 copies to the Department for approval.

RESPONSIBILITIES OF PERMITTEE
PURSUANT TO NON-UTILITY HIGHWAY WORK PERMITS

FAILURE TO OBTAIN A PERMIT OR FAILURE TO COMPLY WITH THE TERMS OF A PERMIT MAY RESULT IN THE DEPARTMENT HALTING THE ACTIVITY FOR WHICH A PERMIT IS REQUIRED UNTIL ADEQUATE CORRECTIONS HAVE BEEN MADE.

PROTECTIVE LIABILITY INSURANCE COVERAGE

Permittee must have protective liability insurance coverage in accordance with Department requirements. See "Certificate of Insurance for Highway Permits" (Form PERM 17, NYSDOT).

Expiration of, or lack of, liability insurance automatically terminates the permit. Insurance coverage may be provided by furnishing the Department with one of the following:

1. A completed Certificate of Insurance for Highway Permits (Form PERM 17, NYSDOT).
2. Purchase the Department Blanket Policy for Highway Work Permits from the Department, if available. N/A shown on the Application in the insurance column means Department insurance coverage is not available for that type of project.
3. Provide an Undertaking. Undertakings are limited to Public Service Corporations and government units.

COMPENSATION INSURANCE AND DISABILITY COVERAGE

The permittee is required to have compensation insurance and disability coverage as noted in the provisions of the Worker's Compensation Law and Acts amendatory thereof for the entire period of the permit, or the permit is invalid.

NOTIFICATION

The following should be notified at the appropriate time as shown below:

1. Commissioner of Transportation, through Regional Office, one week prior to commencing work.
2. Area gas distributors 72 hours prior to any blasting.
3. Utility companies with facilities in work areas before starting work, in accordance with Industrial Code 53 (permission from utility company must be obtained before commencing work affecting utilities' facilities).
4. New York State Department of Transportation, Regional Signal Maintenance Shop, 3 days prior to starting work.
5. New York State Department of Transportation Regional Office at conclusion of work and return original copy of permit to Resident Engineer.

Permit Notification for Annual Permits: Notify by telephone, the Regional or Resident Engineer's Office in advance, when work is to be performed.

SITE CARE AND RESTORATION

An Undertaking, a bond or a certified check in an amount designated by the Department of Transportation may be required by the Regional Office, before a permit is issued, to guarantee restoration of the site to its original condition. If the Department is obliged to restore the site to its original condition, the costs to the Department will be deducted from the amount of the permittee's guarantee deposit at the conclusion of the work. Costs in excess of the Bond/guarantee deposit on file will be billed directly to the permittee.

The permittee is responsible for traffic protection and maintenance including adequate use of signs and barriers during work and evening hours. Anyone working within the State highway right-of-way will wear high visibility apparel (orange/yellow) and hard hat.

No unnecessary obstruction is to be left on the pavement or the State highway right-of-way or in such a position as to block warning signs during non-working hours.

No work shall be done to obstruct drainage or divert creeks, water courses or sluices onto the State highway right-of-way.

All false work must be removed and all excavations must be filled in and restored to the satisfaction of the Regional Maintenance Engineer.

COSTS INCURRED BY ISSUANCE OF THIS PERMIT

All costs beyond the limits of the protective liability insurance, surety deposits, etc. are the responsibility of the permittee. The State shall be held free of any costs incurred by the issuance of this permit, direct or indirect.

SUBMITTING WORK PLANS

The applicant will submit work plans and/or a map as required by the Department. This shall include such details as measurements of driveways with relation to nearest property corner, positions of guys supporting poles and a schedule of the number of poles and feet of excavation necessary for completion of the work on the State right-of-way. A description of the proposed method of construction will be included.

Plan work with future adjustments in mind, as any relocation, replacement or removal of the installation authorized by this permit and made necessary by future highway maintenance, reconstruction or new construction, will be the responsibility of the permittee.

Driveway plans should be prepared in accordance with the POLICY AND STANDARDS FOR ENTRANCES TO STATE HIGHWAYS.

The permittee must coordinate the work with any state construction being conducted.

TRAFFIC MAINTENANCE

A plan detailing how the permittee intends to maintain and protect traffic shall be submitted with work plans. Traffic shall be maintained on the highway in a safe manner during working and non-working hours until construction is completed. The permittee is responsible for traffic protection and maintenance, including adequate use of signs, barriers, and flag persons during working and non-working hours until construction is completed.
All sketches will be stamped with "MAINTENANCE OF TRAFFIC SHALL BE IN CONFORMANCE WITH THE NEW YORK STATE MANUAL OF UNIFORM TRAFFIC CONTROL DEVICES."

COST OF INSPECTION AND SUPERVISION

Prior to issuance of the Highway Work Permit, the permittee may be required to sign an INSPECTION PAYMENT AGREEMENT FOR HIGHWAY WORK PERMITS (FORM PERM 50) agreeing to the payment of inspection charges and/or PAYMENT OF AGREEMENT FOR HIGHWAY WORK PERMITS DESIGN REVIEW (FORM PERM 51) for Department employees. Inspection charges will be based on number of work days. Design Review charges will be based on number of work hours.

SCOPE

Areas Covered: Permits issued are for highways, bridges and culverts over which the New York State Department of Transportation has jurisdiction. (Local governments issue permits for highways under their jurisdiction.)

Legal: The privilege granted by the permit does not authorize any infringement of federal, state or local laws or regulations, is limited to the extent of the authority of this Department in the promises and is transferable and assignable only with the written consent of the Commissioner of Transportation.

Commissioner's Reservation: The Commissioner of Transportation reserves the right to modify fees and to revoke or annul the permit at any time, at his discretion without a hearing or the necessity of showing cause.

Locations: Work locations must be approved by the Department.

Maintenance: Property owners having access to a state highway shall be fully responsible for the maintenance of their driveway in accordance with POLICY AND STANDARDS FOR ENTRANCES TO STATE HIGHWAYS.

Work Commencement: The Permittee shall have a copy of the permit available at the site during the construction period. Work should start within 30 days from validation date of permit or said permit may be revoked.

COMPLETION OF PROJECT

Upon completion of the work within the state highway right-of-way authorized by the work permit, the person and his or its successors in interest, shall be responsible for the maintenance and repair of such work or portion of such work as set forth within the Terms and Conditions of the Highway Work Permit.

PERM 33 (8/01)

STATE OF NEW YORK DEPARTMENT OF TRANSPORTATION
HIGHWAY WORK PERMIT APPLICATION FOR NON-UTILITY WORK

PREPARE 3 COPIES
(photocopies acceptable)

Application is hereby made for a highway work permit:

Name _____

Address _____

City _____ State _____ Zip _____

Federal I.D. No. or Social Security No. _____

Applicant Telephone No. _____

Contact person in case of emergency _____

Telephone No. of contact person _____

For Joint application, name and address of Second Applicant below:

Name _____

Address _____

City _____ State _____ Zip _____

Project Identification No. _____

Highway Work Permit No. _____

RETURN PERMIT TO (If different from above):

Name _____

Address _____

City _____ State _____ Zip _____

RETURN OF DEPOSIT/BOND TO (Complete only if different from permittee):

Name _____

Address _____

City _____ State _____ Zip _____

1. Estimated cost of work being performed in state highway right-of-way $ _____

2. Anticipated duration of work: From _____ 20, _____ thru _____, 20 _____, to apply to the operation(s) checked on the reverse side.

3. Protective Liability Insurance covered by Policy No. _____ ; expires on _____ 20 _____

4. A $20.00 fee will be charged for checks returned by the bank.

PROPOSED WORK (Brief description): _____

_____

_____

_____

ATTACHED: Plans _____ Specifications _____ LOCATION: State Route _____ State Highway _____

between Reference Marker _____ and Reference Marker _____

Town of: _____ County of: _____

SEQR REQUIREMENTS (Check appropriate item):

_____ Exempt _____ Ministerial _____ Type 11 _____ EIS or DEIS Lead Agency _____

If project is identified to be ministerial, exempt, or TYPE 11, no further action is required.

If project is determined to be other than ministerial, exempt, or TYPE 11, refer to M.A.P.7.12-2, Appendix A SEQR REQUIREMENTS FOR HIGHWAY WORK PERMITS.

Acceptance of the requested permit subjects the permittee to the restrictions, regulations and obligations stated on this application and on the permit.

Applicant Signature _____ Date _____ 20 _____.

Second Applicant Signature _____ Date _____ 20 _____.

Approval recommended _____ 20 ___, By Resident Engineer _____ Residency No. _____.

Approved _____ 20 ___, By Regional Traffic Engineer _____ Region No. _____.

PERMIT IS ISSUED CONTINGENT UPON LOCAL REQUIREMENTS BEING SATISFIED.

CHECK TYPE OF OPERATION	Permit Fee	Insurance Fee	Perm 17 or Under Taking	Total Amount of Fee and/or Insurance	Guarantee Deposit and/or Bond Amount
5. ❑ Single job – Permit issued for each job					
a. ❑ Driveway or roadway					
1. ❑ Residential	$ 15	$ 25			
2. ❑ Commercial – Minor	550	175			
a. ❑ Home Business	100	75			
3. ❑ Commercial – Major – (Less than 100,000 square feet Gross Building Area)	1400	N/A			
4. ❑ Commercial – Major – (100,000 square feet Gross Building Area and Greater)	Actual cost with Minimum of $2000 upon permit app.	N/A			
5. ❑ Subdivision Street	900	N/A			
6. ❑ Temporary access road or street	200	150			
b. ❑ Improvement					
1. ❑ Residential	15	25			
2. ❑ Commercial					
Check additional description below:					
a. ❑ Install sidewalk, curb paving, stabilized shoulder, drainage, etc.	200	150			
b. ❑ Grade, seed, improve land contour, clear land of brush, etc.	100	75			
c. ❑ Resurface existing roadway or driveway	50	50			
d. ❑ Annual resurfacing of residential and commercial roadways or driveways.					
1. ❑ Per County	150	N/A			
2. ❑ Per Region	400	N/A			
c. ❑ Tree Work					
1. ❑ Residential	15	25			
2. ❑ Commercial (not required for pruning if utility has annual maintenance permit)	25	50			
Check additional description below:					
a. ❑ Removal or planting					
b. ❑ Pruning, applying chemicals to stumps, etc.					
3. ❑ Vegetation control for advertising signs	150/sign	75			
d. ❑ Miscellaneous Construction					
1. ❑ Beautifying ROW – (for Civic Groups only)	NC	25			
2. ❑ Temporary signs, banners, holiday decorations					
a. ❑ Not-for-profit organizations	NC	25			
b. ❑ Organizations other than not-for-profit	25	25			
3. ❑ Traffic control signals	500	175			
4. ❑ Warning and entrance signs	25	50			
5. ❑ Miscellaneous – Requiring substantial review	400	175			
6. ❑ Miscellaneous	25	50			
6. ❑ Encroachment caused by D.O.T. acquisition of property	25	50			
7. ❑ Compulsory permit required for work performed at the request of D.O.T.					
a. ❑ Building demolition or moving requested by D.O.T.	NC	25			
1. ❑ Demolition 2. ❑ Moving					
b. ❑ Improvement to meet Department standards	NC	25			
8. ❑ Miscellaneous	25	25			
9. ❑ Adopt a Highway	NC	N/A			

Guarantee Deposit Check Number or Bond Number _____

State of New York
Department of Transportation

(Revised 11/03)

Residential Driveway Form

Instructions and Form

Submit with PERM 33

DRIVEWAY DESIGN POLICY

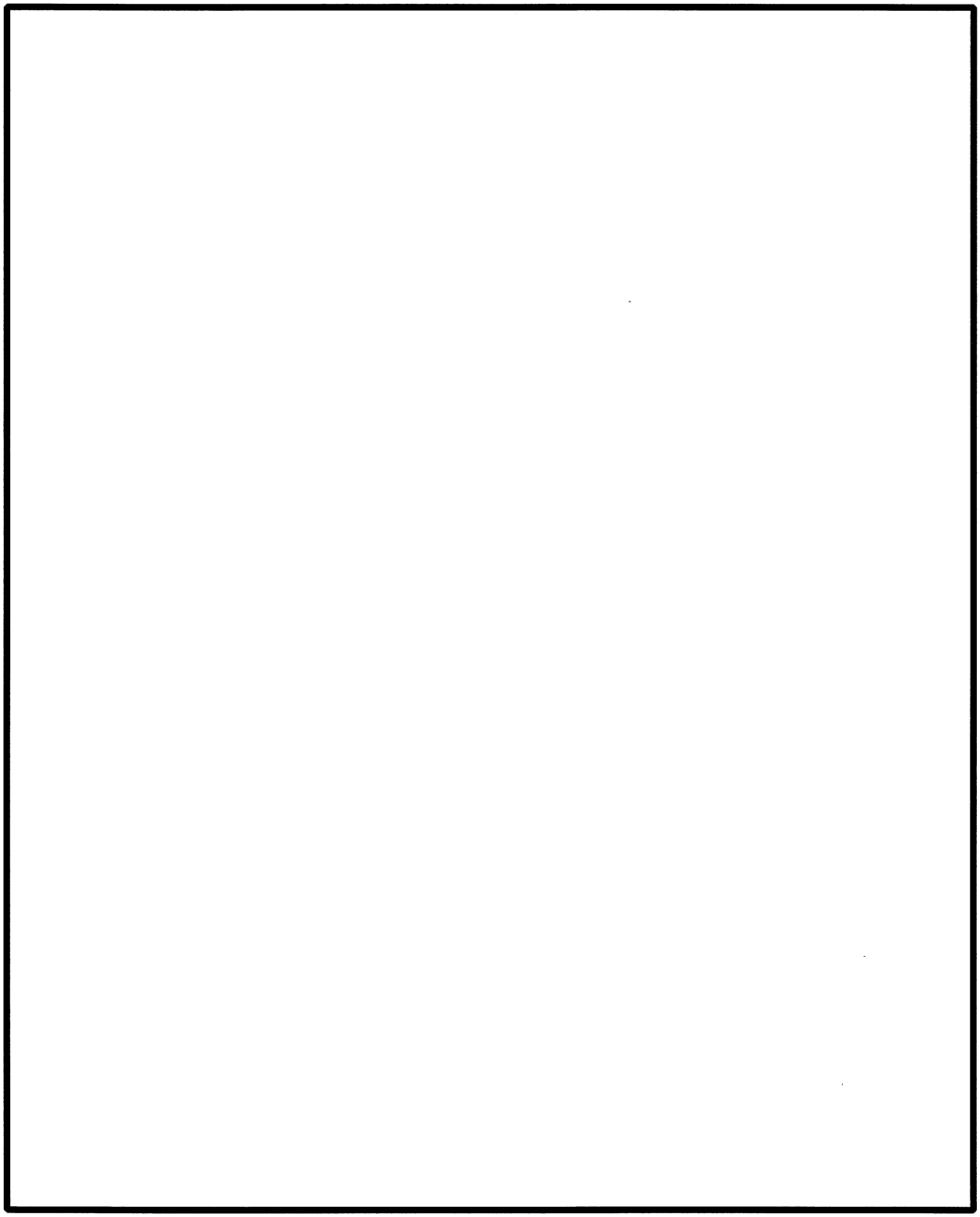
INSTRUCTIONS - This form is for residential driveway applicants only. This form is to be submitted with the PERM 33 *Highway Work Permit Application*. Refer to the New York State *Policy and Standards for the Design of Entrances to State Highways* (i.e., The Driveway Design Policy) for copies of the PERM 33 and for additional guidance and requirements. Complete the white sections of this form.

HELP - Contact the NYSDOT Resident Engineer listed on the Department's Internet home page http://www.dot.state.ny.us/reg/regmenu.html. The address and phone number are also listed in the Government Listings (blue pages) of your local phone book (typically under State Offices, Transportation Department of, Transportation Maintenance).

COPIES - The Driveway Design Policy is available from the New York State Department of Transportation online at http://www.dot.state.ny.us/ or from the Plans Sales Office at (518) 457-2124.

#	Requirements and Questions	✔ or reply
1.	**Sketch of Driveway Site** - A sketch with the following items should be completed on a copy of a tax map or site map and stapled to this form. If a tax map or site map is not available, place a sketch showing the items below on the following page. Please clearly label the items on the sketch and use a ruler or straight edge (The sketch must be clearly legible). • North directional arrow. • Existing location and dimensions of the following items along the frontage of the applicant's property: ▸ Width of the outside highway travel lane. ▸ Width of the highway shoulder. ▸ If the applicant's property is a corner lot, include the distance from the edge of proposed driveway to the edge of pavement of the intersecting roadway. ▸ Curbs. ▸ Highway drainage (culverts, inlets, and ditches). ▸ Guide rail. ▸ Sidewalk. ▸ Utility poles and boxes. ▸ Traffic signs. ▸ Traffic signals. ▸ Property lines. • Existing and proposed buildings on the applicant's property. • Direction of surface water flow on applicant's property (i.e., direction that the rain water flows across the property). • Centerline of the proposed driveway(s). Refer to Figure 5A-1 of the Driveway Design Policy for restrictions on driveway locations. The Department may require additional information as site-specific conditions warrant. The sketch need not be to scale if dimensions are provided. The dimensions should be as follows: • Dimensions less than 30 m (100 ft) should be to the nearest 0.3 m (1 ft). • Dimensions of 30 m (100 ft) to 100 m (300 ft) should be to the nearest 3 m (10 ft). • Distances greater than 100 m (300 ft) need not be measured and can be noted as ">100 m (300 ft)" on the sketch. • U.S. customary (inches and feet) or metric units may be used.	

Sketch of Driveway Site



#	Requirements and Questions	✔ or reply
2.	**Location** - Street address and the distance and direction from nearest cross street or State Highway Reference Marker (include number). Examples: 409 NY Route 7, Princetown, NY, 300 feet west of Kelly Station Road. 512 NY Route 20, Duanesburg, NY, 1000 feet east of Reference Marker 20 1619 1064.	
3.	**Underground Utilities** - Have the location flagged for underground utilities before construction. Up-State NY, call 1 (800) 962-7962. NYC and Long Island, call 1 (800) 272-4480. Date flagged (month/day/year) =	___/___/___
4.	**Select Driveway Width** - Select a preferred driveway width ranging from 9 ft to 24 ft for driveways 50 ft or less in length and 9 ft to 12 ft for driveways longer than 50 ft.	_____ ft.
5.	**Maximum Grade** - In urban areas, the maximum grade is 8% (1 inch per foot). In rural areas, the maximum grade is 12% (1.5 inches per foot). Maximum grade	_____
6.	**Driveway Materials** - • Existing driveway material = • Proposed driveway material within 10 ft of traveled-way (Asphalt or Concrete) =	_____ _____
7.	**Drainage** - If the driveway will cross a ditch, a culvert with a tapered/flared end section is needed. (Culvert head walls may be permitted only if there is a run of existing guide rail along the highway that would prevent an errant vehicle from being abruptly stopped by the head wall.) • Inside diameter (15 in minimum) = • Material =	_____ in _____.
8.	**Curb** - Answer "No" if the highway is not curbed. Dropped curb is a 1 inch high curb running across the driveway opening. This helps keep storm water from flowing from the highway to a driveway with a downhill slope away from the highway. Will dropped curb be used? (Yes or No)	_____
9.	**Corner Angle** - Angle measured from the highway turning into the driveway. 90° is preferred. Angle must be between 60° and 120°.	_____ °
10.	**Layout Method** - Select the layout method using the table below. Attached are the layout instructions. Entrance Type (Radius or Taper) =	_____

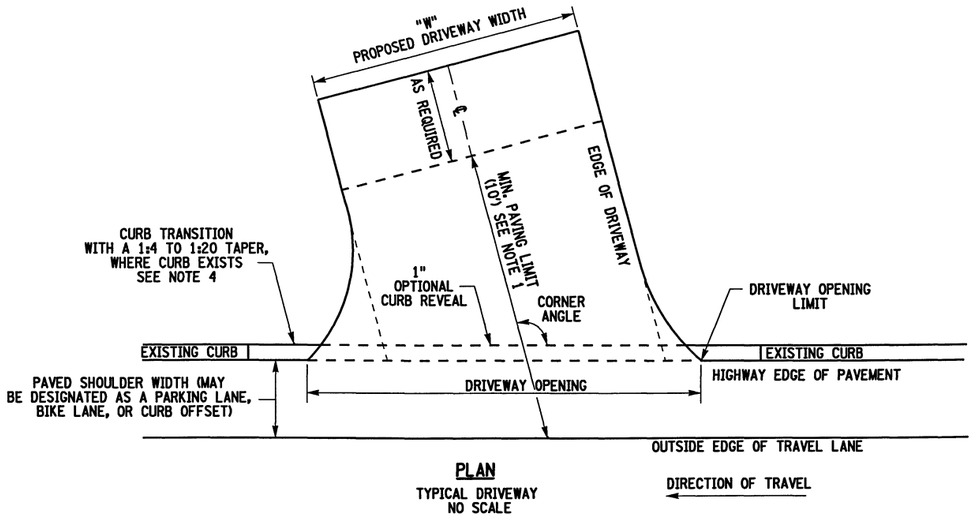
Driveway Entrance Type Selection

Entrance Type	Conditions for Use				
	Corner Angle*	Travel Lane and Paved Shoulder Width	Curb	Sidewalk	Highway Design Speed
Radius Type	60 - 120	Any	Use with or without curb	Use with or without sidewalk	Any
Taper Type	80 - 100	16 ft or greater	Use only with curb	Use with or without sidewalk	Only low speed (posted 40 mph or less)**

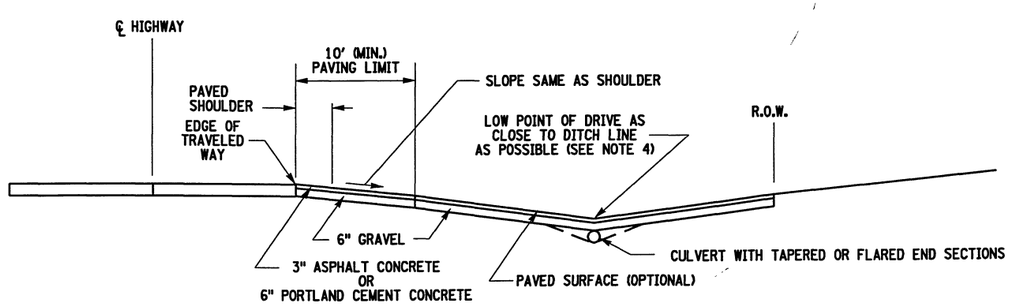
* The corner angle is the angle between the driveway centerline and the highway centerline.

** Unless otherwise directed by the Department.

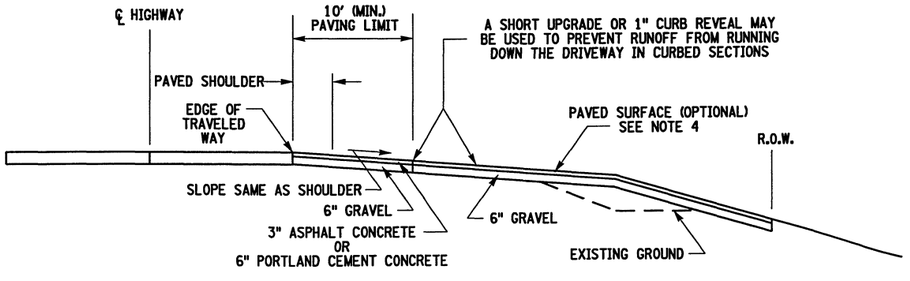
CONSTRUCTION PLANS & PROFILES - The following pages are layout instructions for you or your driveway contractor.



PLAN
TYPICAL DRIVEWAY
NO SCALE



PROFILE - CUT SECTION
TYPICAL DRIVEWAY
NO SCALE



PROFILE - FILL SECTION
TYPICAL DRIVEWAY
NO SCALE

NOTES:

1. IF SIDEWALK IS PRESENT, PAVE DRIVE A MINIMUM OF 2' BEYOND SIDEWALK. SIDEWALKS SHALL HAVE A 6" MINIMUM THICKNESS (IF PORTLAND CEMENT CONCRETE).
2. SIDEWALK RAMPS MUST HAVE A MAXIMUM SLOPE OF 1 in/ft EXCEPT WHERE THE HIGHWAY GRADE MAKES THIS IMPRACTICAL. IN SUCH CASES, USE A 15' RAMP LENGTH.
3. PLACE WIRE FABRIC REINFORCEMENT 3" BELOW TOP SURFACE OF PORTLAND CEMENT CONCRETE SIDEWALKS AND DRIVEWAYS.
4. NEW CURB SHALL NOT BE CONSTRUCTED. DETAIL SHOWS HOW TO CONSTRUCT A DRIVEWAY OPENING WHERE CURB IS PRESENT. IF CURB IS NOT PRESENT, OMIT THE CURB TRANSITION.
5. PAVED SHOULDER WIDTH MAY BE DESIGNATED AS A PARKING LANE, BIKE LANE, OR CURB OFFSET
6. ROUND SHARP CHANGES IN GRADE TO PREVENT VEHICLES FROM BOTTOMING OUT.

METHOD OF LAYOUT

STEP 1. LOCATE AN OFFSET LINE 11' FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE.

STEP 2. SCRIBE A LINE PARALLEL TO THE OFFSET LINE, OFFSET A DISTANCE "R" EQUAL TO 16' (FOR DRIVEWAYS 13' OR LESS IN WIDTH) OR 13' (FOR DRIVEWAYS 14' OR WIDER).

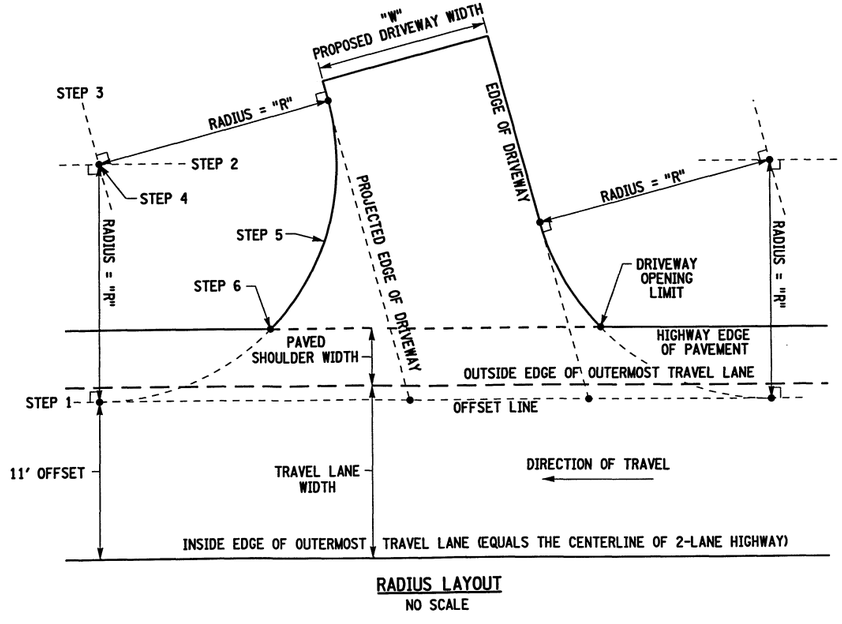
STEP 3. SCRIBE A LINE PARALLEL TO THE EDGE OF DRIVEWAY (NEAR SIDE), OFFSET "R" FEET.

STEP 4. FIND THE CENTER POINT OF THE CORNER RADIUS ARC, WHICH IS LOCATED AT THE INTERSECTION OF THE LINES FROM STEPS 2 AND 3.

STEP 5. FROM THE CENTER POINT, SCRIBE AN ARC WITH RADIUS "R", WHICH IS TANGENT TO BOTH THE OFFSET LINE AND THE EDGE OF DRIVEWAY.

STEP 6. FIND THE DRIVEWAY OPENING LIMIT POINT WHERE THE ARC INTERSECTS THE HIGHWAY EDGE OF PAVEMENT.

STEP 7. REPEAT STEPS 1 - 6 FOR THE OTHER SIDE OF THE DRIVEWAY OPENING.



RADIUS LAYOUT
NO SCALE

RESIDENTIAL DRIVEWAY
FIGURE 1

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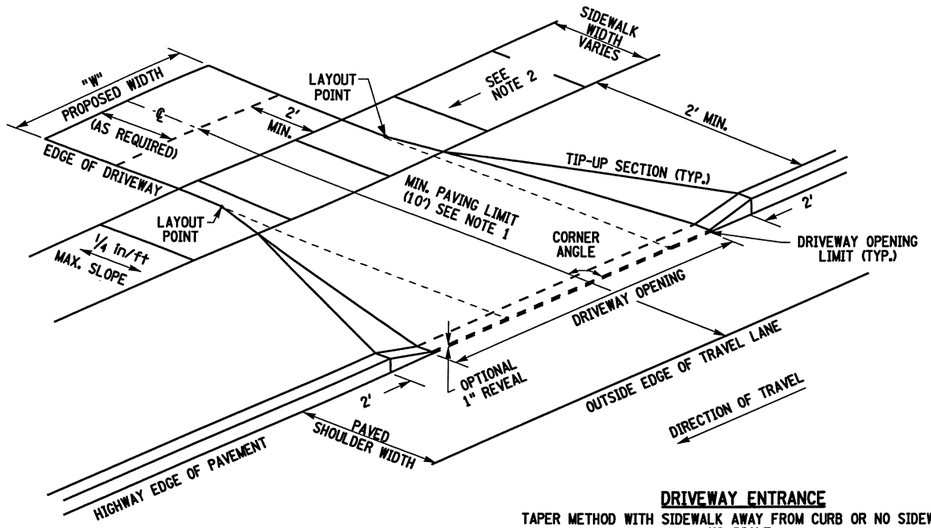
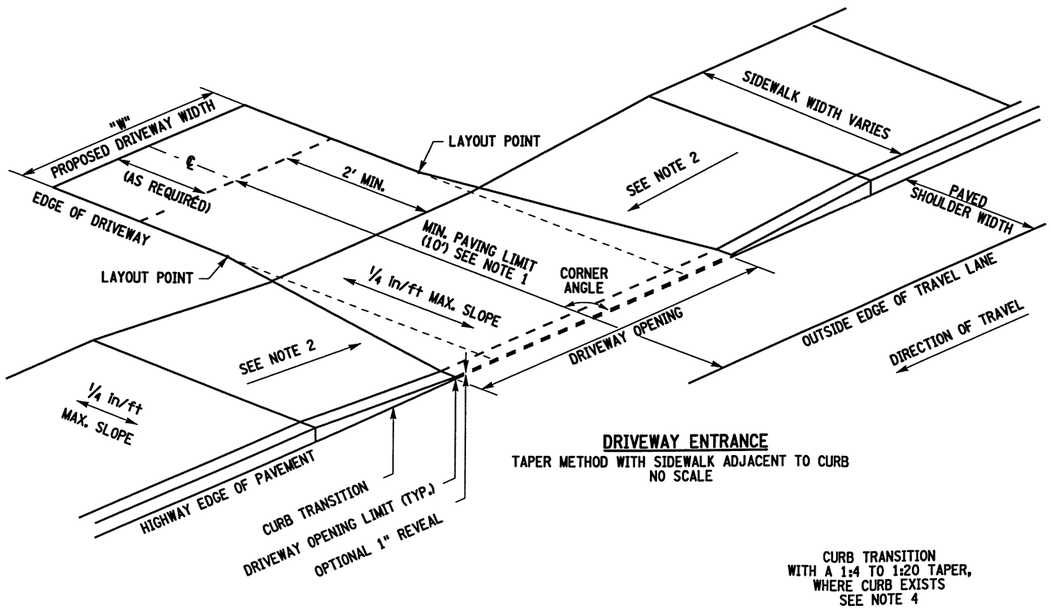


DRIVEWAY ENTRANCE
TAPER METHOD WITH SIDEWALK AWAY FROM CURB OR NO SIDEWALK
NO SCALE



DRIVEWAY ENTRANCE
TAPER METHOD WITH SIDEWALK ADJACENT TO CURB
NO SCALE

CURB TRANSITION
WITH A 1:4 TO 1:20 TAPER,
WHERE CURB EXISTS
SEE NOTE 4

NOTES:

1. PAVE DRIVE A MINIMUM OF 2' BEYOND SIDEWALK. SIDEWALKS SHALL HAVE A 6" MINIMUM THICKNESS (IF PORTLAND CEMENT CONCRETE).
2. SIDEWALK RAMPS MUST HAVE A MAXIMUM SLOPE OF 1 in/ft EXCEPT WHERE THE HIGHWAY GRADE MAKES THIS IMPRACTICAL. IN SUCH CASES, USE A 15' RAMP LENGTH.
3. PLACE WIRE FABRIC REINFORCEMENT 3" BELOW THE TOP SURFACE OF PORTLAND CEMENT CONCRETE SIDEWALKS AND DRIVEWAYS.
4. NEW CURB SHALL NOT BE CONSTRUCTED. DETAIL SHOWS HOW TO CONSTRUCT A DRIVEWAY OPENING WHERE CURB IS PRESENT. IF CURB IS NOT PRESENT, OMIT THE TIP-UP SECTION AND CURB TRANSITION.
5. PAVED SHOULDER WIDTH MAY BE DESIGNATED AS A PARKING LANE, BIKE LANE, OR CURB OFFSET
6. ROUND SHARP CHANGES IN GRADE TO PREVENT VEHICLES FROM BOTTOMING OUT.

TAPER METHOD OF LAYOUT

TAPERS ARE NOT RECOMMENDED FOR DRIVEWAYS WITH CORNER ANGLES LESS THAN 80 DEGREES OR GREATER THAN 100 DEGREES. TAPERS ARE NOT RECOMMENDED FOR DRIVEWAYS WITH AN OUTER TRAVEL LANE + PAVED SHOULDER WIDTH OF LESS THAN 16'. REGARDLESS OF THE CORNER ANGLE OR COMBINED LANE AND PAVED SHOULDER WIDTH, TAPERS CAN BE USED IF THE DRIVEWAY ENTRANCE WIDTH WILL ACCOMMODATE THE TURNING MOVEMENTS OF A FULL-SIZED PICKUP TRUCK OR SUV WITHOUT ENCROACHING INTO OTHER TRAVEL LANES OR TRAVELING OFF THE EDGE OF PAVEMENT.

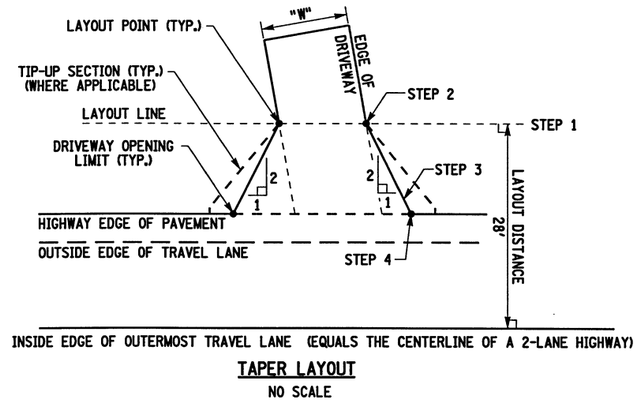
STEP 1. SCRIBE A LINE (LAYOUT LINE) OFFSET THE 28' 'LAYOUT DISTANCE' FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE.

STEP 2. LOCATE THE TAPER LAYOUT POINT, WHICH IS AT THE INTERSECTION OF THE EDGE OF DRIVEWAY AND THE LAYOUT LINE.

STEP 3. SCRIBE A 1:2 TAPER FROM THE LAYOUT POINT TO THE EDGE OF PAVEMENT.

STEP 4. FIND THE DRIVEWAY OPENING LIMIT POINT WHICH IS WHERE THE TAPER INTERSECTS THE EDGE OF PAVEMENT.

STEP 5. REPEAT STEPS 1 - 4 FOR THE OTHER SIDE OF THE DRIVEWAY OPENING.



TAPER LAYOUT
NO SCALE

RESIDENTIAL DRIVEWAY
FIGURE 2

FED ROAD REG. NO.	STATE	CONTRACT NO.	SHEET NO.	TOTAL SHEETS
1	N.Y.			

P.I.N. | B.I.N.

DRIVEWAY TABLE

LOCATION STA./RM	SIDE	EXISTING MATERIAL	CLASS	W	CORNER ANGLE$_{IN}$	PL	TL	ENTRANCE TYPE	COMMENTS

DRIVEWAY TABLE

LOCATION STA./RM	SIDE	EXISTING MATERIAL	CLASS	W	CORNER ANGLE$_{IN}$	PL	TL	ENTRANCE TYPE	COMMENTS

NOTES:

1. SEE THE STANDARD SHEETS "POLICY AND STANDARDS FOR THE DESIGN OF ENTRANCES TO STATE HIGHWAYS" FOR FURTHER DETAILS.
2. THE DESIGNER AND THE APPROPRIATE REFERENCES (SEE NOTE 1) SHALL BE CONSULTED BEFORE ADDING ADDITIONAL DRIVEWAYS OR CHANGING THE DRIVEWAY LAYOUT OR ENTRANCE TYPE.
3. FOR ALL DRIVEWAYS EXCEPT PORTLAND CEMENT CONCRETE DRIVEWAYS, THE PROPOSED DRIVEWAY MATERIAL FOR THE PAVEMENT LENGTH ("PL") IS ASPHALT CONCRETE UNLESS OTHERWISE NOTED IN THE TABLE.
4. TRANSITION LENGTH ("TL") IS ONLY APPLICABLE TO NON-PAVEMENT (STONE, GRAVEL, GRASS, OR DIRT) DRIVEWAYS EXTENDED BEYOND THE PAVEMENT LENGTH ("PL").
5. THE LENGTH OF ANY GRADING TRANSITION TO EXISTING DRIVEWAY PAVEMENT IS INCLUDED AS PART OF THE PAVEMENT LENGTH ("PL") (SEE 'TIE-IN TO EXISTING PAVED DRIVEWAYS' ON STANDARD SHEET 'DRIVEWAY DESIGN GUIDELINES').

TABLE DATA FORMAT/DEFINITIONS:

EXISTING MATERIAL
TYPICAL ENTRIES INCLUDE:
'AC' (ASPHALT CONCRETE)
'PCC' (PORTLAND CEMENT CONCRETE)
'STONE', 'GRAVEL', 'DIRT', OR 'GRASS'

CLASS (CLASSIFICATION)
TYPICAL ENTRIES INCLUDE:
'R' (RESIDENTIAL)
'C' (MINOR COMMERCIAL)
'M' (MAJOR COMMERCIAL)
'F' (FIELD ENTRANCE)

W = WIDTH OF DRIVEWAY

CORNER ANGLE (IN) = ANGLE BETWEEN ROADWAY AND DRIVEWAY AS IF TURNING FROM THE ROADWAY ONTO THE DRIVEWAY (60° TO 120° ALLOWABLE).

PL = DRIVEWAY PAVEMENT LENGTH

TL = DRIVEWAY TRANSITION LENGTH

ENTRANCE TYPE
TYPICAL ENTRIES INCLUDE: '1', '2', '3', OR '4'
(TYPES 1 AND 2 USE RADIUS, TYPE 3 AND 4 USE TAPER, SEE STANDARD SHEET 'DRIVEWAY ENTRANCE DETAILS')

PAY ITEM	DESCRIPTION
203.02	UNCLASSIFIED EXCAVATION AND DISPOSAL
203.03	EMBANKMENT IN PLACE
304.__	SUBBASE COURSE
608.0101	CONCRETE SIDEWALKS AND DRIVEWAYS
608.020101	ASPHALT CONCRETE SIDEWALKS, DRIVEWAYS & BIKE PATHS
623.02	CRUSHED GRAVEL
623.03	CRUSHED STONE

ALL DIMENSIONS ARE IN __ UNLESS OTHERWISE NOTED

AS BUILT REVISIONS

SIGNATURE DATE

STATE OF NEW YORK
DEPARTMENT OF TRANSPORTATION

FILENAME	REGION	DATE	DRAWING NO.

DESIGN SUPERVISOR ___ JOB MANAGER ___ DESIGNED BY ___ DRAFTED BY ___ ESTIMATED BY ___ CHECKED BY ___ CHECKED BY

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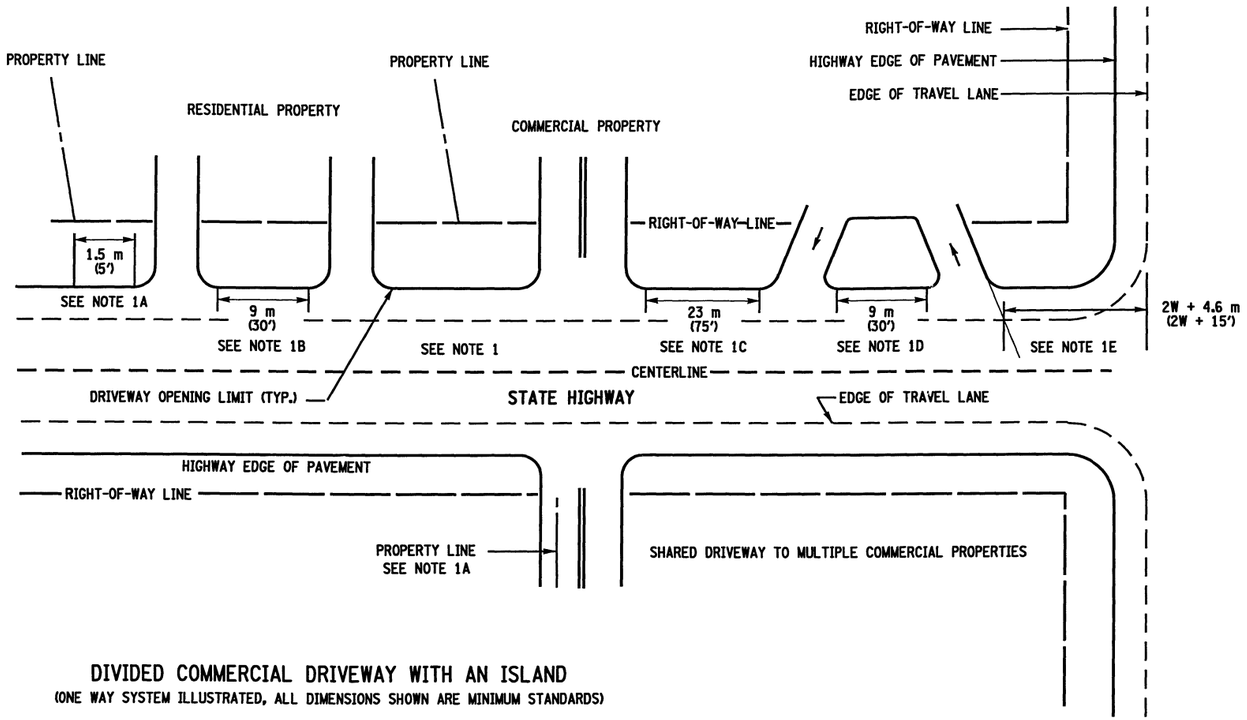
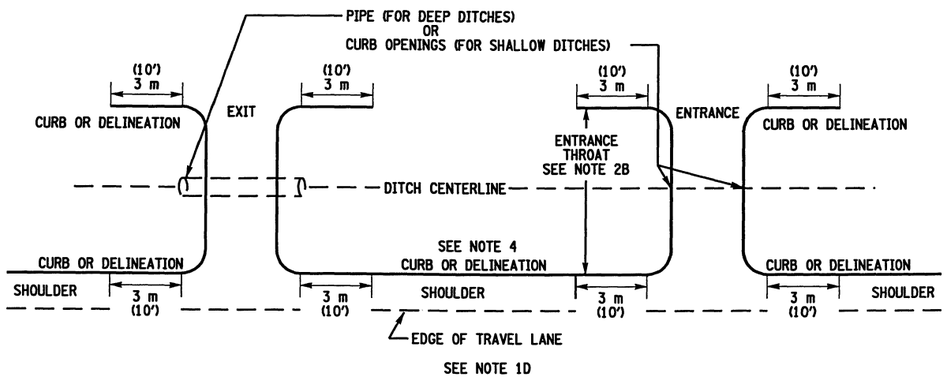
DRIVEWAY LOCATION STANDARDS

ALL DIMENSIONS SHOWN ARE MINIMUM STANDARDS

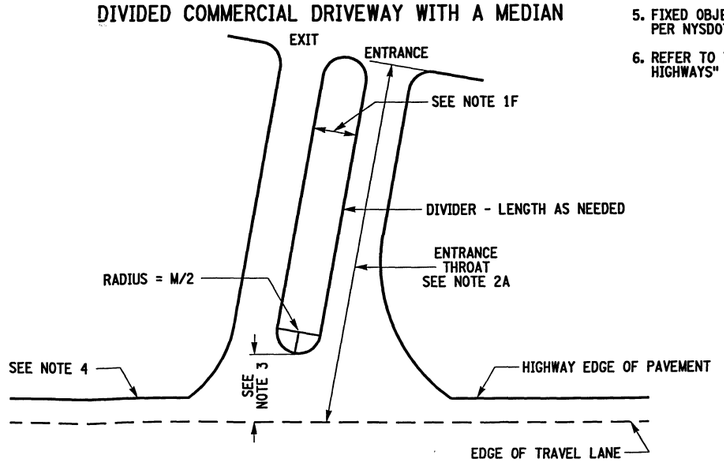


DIVIDED COMMERCIAL DRIVEWAY WITH AN ISLAND

(ONE WAY SYSTEM ILLUSTRATED, ALL DIMENSIONS SHOWN ARE MINIMUM STANDARDS)



DIVIDED COMMERCIAL DRIVEWAY WITH A MEDIAN



NOTES:

1. DRIVEWAY SPACING MEASURED ALONG THE HIGHWAY EDGE OF PAVEMENT:

   A. PROPERTY LINE: THE MINIMUM DISTANCE BETWEEN THE DRIVEWAY OPENING LIMIT AND THE POINT WHERE A PROJECTION (PERPENDICULAR TO THE CENTERLINE OF THE ROADWAY FROM THE NEAR PROPERTY CORNER) MEETS THE HIGHWAY EDGE OF PAVEMENT IS TO BE 1.5 m (5'). THIS RESTRICTION DOES NOT APPLY TO THE PROPERTY LINES BETWEEN OWNERS OF A SHARED DRIVEWAY.

   B. TWO DRIVES TO RESIDENTIAL PROPERTY (IF PERMITTED): THE MINIMUM DISTANCE BETWEEN THE DRIVEWAY OPENING LIMITS SHALL BE 9 m (30').

   C. ADJACENT DRIVEWAYS OR MULTIPLE DRIVEWAYS TO A COMMERCIAL PROPERTY: THE MINIMUM DISTANCE BETWEEN THE DRIVEWAY OPENING LIMITS SHALL BE 23 m (75'). IF THE DEPARTMENT ALLOWS AN EXISTING LESSER WIDTH TO BE RETAINED, THE ENTIRE SHOULDER AREA BETWEEN DRIVEWAYS SHALL BE REPLACED WITH ADEQUATE DRIVEWAY MATERIAL AND, IF SPEEDS ARE BELOW 80 km/h (50 mph), IT SHALL BE CURBED (WITH DRAINAGE OPENINGS AS NECESSARY).

   D. ONE-WAY COMMERCIAL DRIVES SEPARATED BY AN ISLAND: THE MINIMUM DISTANCE BETWEEN THE DRIVEWAY OPENING LIMITS SHALL BE 9 m (30')

   E. INTERSECTION: THE DISTANCE BETWEEN THE EDGE OF A DRIVEWAY (PROJECTED TO THE TRAVELED WAY) AND A SIDE ROAD TRAVEL LANE EDGE SHALL BE AT LEAST TWICE THE WIDTH OF THE DRIVEWAY PLUS 4.6 m (15'). IF PRACTICABLE, STRIVE FOR AT LEAST A 30 m (100') OFFSET TO A SIGNALIZED SIDE ROAD PAVEMENT EDGE.

   F. ONE-WAY COMMERCIAL DRIVES SEPARATED BY A MEDIAN: THE MEDIAN WIDTH (W) MAY BE 1.2 m TO 4.9 m (4' TO 16').

   G. REFER TO CHAPTER 6 OF THE NYSDOT HIGHWAY DESIGN MANUAL (NYSDOT HDM) FOR CONTROL OF ACCESS LIMITS FOR DIAMOND AND OTHER TYPES OF INTERCHANGES.

2. COMMERCIAL DRIVEWAY THROAT (MEASURED ALONG DRIVEWAY ENTRANCE):

   A. TWO-WAY DRIVES AND ONE-WAY DRIVES SEPARATED BY A MEDIAN: THE MINIMUM DEPTH OF ENTRANCE THROAT SHOULD BE 9 m (30') FOR MINOR COMMERCIAL DRIVES AND 15 m (50') FOR MAJOR COMMERCIAL DRIVES.

   B. ISLANDS: THE MINIMUM DEPTH OF THE ENTRANCE THROAT SHOULD BE AT LEAST ONE HALF THE WIDTH OF THE WIDEST DRIVEWAY.

3. COMMERCIAL DRIVEWAY MEDIANS SHOULD BE OFFSET TO AVOID TURNING PATH OF VEHICLE. AS A MINIMUM:

   A. ON CURBED HIGHWAYS, OFFSET THE END OF THE MEDIAN AT LEAST 1.2 m (4') BEHIND THE CURB LINE.

   B. ON HIGHWAYS WITH SHOULDERS, THE END OF THE MEDIAN SHALL NOT INFRINGE ON THE SHOULDER AND SHALL BE OFFSET AT LEAST 1.2 m (4') BEHIND THE OUTERMOST TRAVEL LANE, WHICHEVER IS GREATER.

4. CURBING:

   A. WHERE NO CURBING EXISTS, ANY PROPOSED NEW CURBING SHALL CONFORM TO CHAPTER 3, SECTION 3.2.9, OF THE NYSDOT HDM AND SHOULD BE OFFSET FROM THE TRAVEL LANE TO ALLOW THE INSTALLATION OF A STANDARD PAVED SHOULDER OR CURB OFFSET IN ACCORDANCE WITH NYSDOT HDM CHAPTER 2, SECTION 2.7.

   B. WHERE CURBING EXISTS AT THE EDGE OF HIGHWAY, CURBING SHALL MATCH THE ADJACENT CURB TYPE AND ALIGNMENT.

5. FIXED OBJECTS SHALL BE LOCATED OUTSIDE OF THE HIGHWAY'S CLEAR ZONE WIDTH PER NYSDOT HDM CHAPTER 10.

6. REFER TO THE "POLICY AND STANDARDS FOR THE DESIGN OF ENTRANCES TO STATE HIGHWAYS" SECTION 5A.4 FOR ADDITIONAL REQUIREMENTS AND THE NEED FOR PERMITS.

FIGURE 5A-1

DEFINITION OF TERMS

DRIVEWAY -
EVERY ENTRANCE OR EXIT USED BY VEHICULAR TRAFFIC TO AND FROM LANDS OR BUILDINGS ABUTTING A STATE HIGHWAY.

RESIDENTIAL DRIVEWAY -
A DRIVEWAY SERVING FOUR OR FEWER PRIVATE HOMES OR AN APARTMENT BUILDING FOR FOUR OR FEWER FAMILY UNITS.

COMMERCIAL DRIVEWAY -
A DRIVEWAY SERVING A COMMERCIAL ESTABLISHMENT, INDUSTRY, GOVERNMENTAL OR EDUCATIONAL INSTITUTION, PRIVATE UTILITY, HOSPITAL, CHURCH, APARTMENT BUILDING, OR OTHER COMPARABLE TRAFFIC GENERATOR.

MAJOR COMMERCIAL DRIVEWAY -
ANY COMMERCIAL DRIVEWAY WHERE THE ACTUAL OR ANTICIPATED TRAFFIC VOLUME ON A TYPICAL DAY IS EITHER: (1) 100 OR MORE ONE-WAY TRIPS DURING THE PEAK HOUR FOR EITHER THE ADJACENT ROADWAY OR THE DEVELOPMENT, OR (2) 50 OR MORE ONE-WAY TRIPS DURING THE 8TH HIGHEST HOUR OF ANNUAL DRIVEWAY ACTIVITY.

MINOR COMMERCIAL DRIVEWAY -
ANY COMMERCIAL DRIVEWAY WHERE THE ACTUAL OR ANTICIPATED TRAFFIC VOLUMES ON A TYPICAL DAY ARE LESS THAN THE VALUES STIPULATED FOR A MAJOR COMMERCIAL DRIVEWAY.

FIELD ENTRANCE -
A DRIVEWAY SERVING A FARMYARD, CULTIVATED OR UNCULTIVATED FIELD; TIMBERLAND; OR UNDEVELOPED LAND NOT USED FOR INDUSTRIAL, COMMERCIAL, OR RESIDENTIAL PURPOSES.

URBAN / RURAL -
THE ENGINEER WILL DETERMINE THE AREA CHARACTER BASED ON NYSDOT HIGHWAY DESIGN MANUAL CHAPTER 2, SECTION 2.4.

MINIMUM PAVING LIMIT ("MPL") -
THE MINIMUM DISTANCE FROM THE OUTSIDE EDGE OF TRAVEL LANE THAT THE DRIVEWAY MUST BE PAVED AS MEASURED ALONG THE CENTERLINE OF THE DRIVEWAY (INCLUDES THE SHOULDER WIDTH).

PAVEMENT LENGTH ("PL") -
THE DISTANCE FROM THE HIGHWAY EDGE OF PAVEMENT TO THE END OF PROPOSED DRIVEWAY PAVEMENT AS MEASURED ALONG THE CENTERLINE OF THE DRIVEWAY (NOTE THAT "PL" IS MEASURED FROM DIFFERENT POINTS THAN "MPL")

TRANSITION LENGTH ("TL") -
THE DISTANCE ALONG THE CENTERLINE OF DRIVEWAY BEYOND THE DRIVEWAY PAVEMENT LENGTH ("PL") TO THE END OF PROPOSED DRIVEWAY WORK (USUALLY FOR GRADING, DRIVEWAY ENTRANCE LAYOUT, OR TRANSITION REASONS). THE TRANSITION LENGTH ONLY APPLIES TO NON-PAVEMENT DRIVEWAYS (EXAMPLE: DIRT, GRASS, GRAVEL, OR STONE DRIVEWAYS)

DRIVEWAY OFFSET -
THE DISTANCE FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE (OR TURNING LANE) TO THE HIGHWAY EDGE OF PAVEMENT (EQUALS OUTERMOST TRAVEL LANE + PAVED SHOULDER OR CURB OFFSET).

HIGHWAY EDGE OF PAVEMENT -
THE OUTSIDE EDGE OF THE PAVED HIGHWAY SURFACE, INCLUDING ANY PAVED SHOULDER, BIKE LANE, PARKING LANE, OR CURB OFFSET.

GENERAL NOTES FOR DRIVEWAY STANDARD SHEETS

GENERAL

A. THE DRIVEWAY STANDARD SHEETS APPLY TO FIELD ENTRANCES, RESIDENTIAL DRIVEWAYS AND MINOR COMMERCIAL DRIVEWAYS. FIELD ENTRANCES AND RESIDENTIAL DRIVEWAYS ACCOMMODATE AN AASHTO PASSENGER CAR DESIGN VEHICLE. MINOR COMMERCIAL DRIVEWAYS ACCOMMODATE AN AASHTO SINGLE UNIT TRUCK DESIGN VEHICLE.

B. WORK PERFORMED OFF THE RIGHT-OF-WAY REQUIRES A DRIVEWAY RELEASE TO BE ACQUIRED BY THE ENGINEER.

C. SEE THE DRIVEWAY TABLE IN THE CONTRACT PLANS FOR SPECIFIC DRIVEWAY LOCATIONS, WIDTHS ("W"), CORNER ANGLES, LENGTHS ("L"), MATERIAL, AND ENTRANCE TYPE.

WIDTH/LENGTH

D. IF THERE ARE CONSTRAINTS THAT PREVENT THE CONSTRUCTION OF THE DRIVEWAY OPENING AS PER EITHER OF THE LAYOUT METHODS, THE ENGINEER MAY SPECIFY A SMALL CORNER CURB RADIUS OF 2' (OR "1/2 BULLNOSE" CURB ALONG LOW SPEED HIGHWAYS),PROVIDED THE DRIVEWAY OPENING MEETS THE WIDTH ON FIGURE 5A-5 "DRIVEWAY OPENING LIMITS."

E. FOR RESIDENTIAL DRIVEWAYS, THE MINIMUM PAVING LIMIT SHALL BE 10' FROM THE OUTSIDE EDGE OF TRAVEL LANE OR 2' BEHIND ANY SIDEWALK, IF PRESENT, WHICHEVER IS GREATER. FOR MINOR COMMERCIAL DRIVEWAYS, THE MINIMUM PAVING LIMIT SHALL EXTEND TO THE RIGHT-OF-WAY LINE OR 2' BEHIND ANY SIDEWALK, IF PRESENT, OR 10' FROM THE OUTSIDE EDGE OF TRAVEL LANE, WHICHEVER IS GREATER. THE PAVING LIMIT MAY EXTEND BEYOND THE MINIMUM PAVING LIMIT FOR NEW DRIVEWAYS AND TO TRANSITION TO EXISTING PAVED DRIVEWAYS. THE PAVING LIMIT WILL BE NOTED IN THE DRIVEWAY TABLE OF THE CONTRACT PLANS.

F. FOR GRADING AND CONSTRUCTION REQUIREMENTS OF TRANSITIONS FROM PLACED ASPHALT CONCRETE TO EXISTING ASPHALT CONCRETE DRIVEWAYS, REFER TO THE "TIE-IN TO EXISTING DRIVEWAYS" DETAIL AND TABLE 3 -'DRIVEWAY MATERIALS AND THICKNESS'.

G. FOR PORTLAND CEMENT CONCRETE DRIVEWAYS, REFER TO THE 502 SERIES N.Y.S. STANDARD SHEETS FOR METAL REINFORCEMENT, JOINT TIES, SAWING AND SEALING, ETC.

SITE CONDITIONS (SIDEWALK/CURB)

H. ANY SIDEWALK WHICH CROSSES A DRIVEWAY SHALL HAVE A MINIMUM THICKNESS OF 6". AND INCLUDE WIRE FABRIC REINFORCEMENT WITH 3" OF TOP COVER.

I. TO PREVENT DRIVEWAY GRADES FROM EXCEEDING THE VALUES IN TABLE 2 - 'MAXIMUM SLOPE', IT MAY BE NECESSARY TO DEPRESS THE SIDEWALK ACROSS THE DRIVEWAY. SIDEWALK RAMPS SHALL HAVE A MAXIMUM LONGITUDINAL SLOPE OF 1:12. WHERE THE HIGHWAY GRADE MAKES A 1:12 SLOPE IMPRACTICAL, THE RAMP LENGTH MAY BE RESTRICTED TO 15'.

J. FOR TYPE 1 AND TYPE 2 DRIVEWAY ENTRANCES, IF THERE IS ABUTTING SIDEWALK AND THE OFFSET BETWEEN THE SIDEWALK AND THE BACK OF CURB IS LESS THAN 2', USE THE TYPE 4 SIDEWALK RAMP ON THE N.Y.S. "SIDEWALK CURB RAMP DETAILS" STANDARD SHEET.

K. WHERE DRAINAGE IS CARRIED ALONG THE CURB, CONSTRUCT THE DRIVEWAY WITH A SHORT UPGRADE TO PREVENT RUNOFF FROM PONDING AT THE DRIVEWAY ENTRANCE (FLAT DRIVEWAY) OR RUNNING DOWN THE DRIVEWAY (DOWNHILL DRIVEWAY SLOPE). IF CONDITIONS MAKE THE ADDITION OF A SHORT UPGRADE IMPRACTICAL, CURB REVEAL ALONG THE DRIVEWAY OPENING MAY BE SPECIFIED BY THE ENGINEER. TYPICALLY, CURB REVEAL WILL NOT BE CONSTRUCTED IN RURAL AREAS. IF CURB REVEAL IS SPECIFIED FOR A SPECIFIC DRIVEWAY, IT WILL BE NOTED IN THE DRIVEWAY TABLE OF THE CONTRACT PLANS IN THE 'COMMENTS' COLUMN.

ENTRANCE TYPE

L. THE ENGINEER MAY INTERCHANGE TYPE 1, TYPE 3 AND TYPE 4 RESIDENTIAL DRIVEWAYS TO BETTER MATCH THE EXISTING ENTRANCE TYPES ALONG THE HIGHWAY CORRIDOR WHILE CONSIDERING AVAILABLE SPACE, CONSTRUCTABILITY, SAFETY, AND FUNCTIONALITY. THE DRIVEWAY TYPE WILL COMPLY WITH TABLE 4 'DRIVEWAY ENTRANCE TYPE SELECTION' ON FIGURE 5A-3 'DRIVEWAY ENTRANCE DETAILS'.

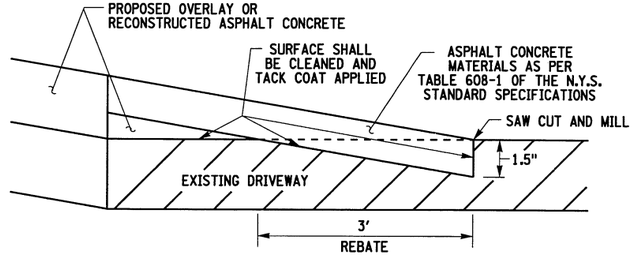
M. FOR DRIVEWAYS WITH VARYING WIDTHS AND/OR CURVED ALIGNMENTS, DETERMINE THE DRIVEWAY WIDTH AND CORNER ANGLE 16' FROM THE EDGE OF TRAVEL LANE.

N. FOR A ONE-WAY DRIVEWAY ENTRANCE OR EXIT, THE DRIVEWAY ENTRANCE WIDENING IS ONLY NECESSARY ON ONE SIDE OF THE DRIVEWAY TO ACCOMMODATE THE ONE PARTICULAR TURNING MOVEMENT. ONE-WAY DRIVEWAYS WILL BE IDENTIFIED ON THE DRIVEWAY TABLE OF THE CONTRACT PLANS UNDER 'COMMENTS'. FOR CURBED HIGHWAYS, A SMALL CORNER CURB RADIUS OF 2' (OR '1/2 BULLNOSE' CURB ALONG LOW SPEED HIGHWAYS) SHALL BE CONSTRUCTED TO ELIMINATE A SHARP CORNER BEND IN THE CURBLINE (THIS IS SAFER FOR SNOWPLOW OPERATIONS).

MATERIAL

O. FOR DRIVEWAY MATERIAL REQUIREMENTS, USE TABLE 3-'DRIVEWAY MATERIALS AND THICKNESS'.

P. FOR FIELD ENTRANCES, THE MATERIAL WITHIN THE PAVEMENT LENGTH ("PL") CAN CONSIST OF GRAVEL OR STONE AND THEY MAY BE CONNECTED TO THE EDGE OF THE HIGHWAY SHOULDER WITHOUT REMOVING ANY OF THE EXISTING SHOULDER MATERIAL.



TIE-IN TO EXISTING DRIVEWAYS
FOR ASPHALT CONCRETE
NO SCALE

TABLE 1
RECOMMENDED DRIVEWAY WIDTH "W"

DRIVEWAY CLASSIFICATION	STANDARD WIDTH	PERMISSIBLE RANGE OF WIDTHS
RESIDENTIAL -		
- GREATER THAN 50' IN LENGTH	12'	9' TO 12'
- 50' OR LESS IN LENGTH	12'	9' TO 12'
MINOR COMMERCIAL		
- SHARED TWO-WAY DRIVEWAY	24'	22' TO 30'
- DIVIDED OR ONE-WAY DRIVEWAY	16'	12' TO 24'
- MULTI-LANE DRIVEWAY	12' LANES	N/A

TABLE 2
MAXIMUM SLOPE

ROADWAY CLASSIFICATION	COMMERCIAL DRIVEWAY	RESIDENTIAL DRIVEWAY
RURAL	10%	12%
URBAN	6%	8%

TABLE 3 - DRIVEWAY MATERIALS AND THICKNESS

PROPOSED OR EXISTING DRIVE	WITHIN DRIVEWAY PAVEMENT LENGTH ("PL")			WITHIN TRANSITION LENGTH ("TL")		
	MATERIAL	THICKNESS FOR RESIDENTIAL (INCHES)	THICKNESS FOR MINOR COMMERCIAL (INCHES)	MATERIAL	THICKNESS FOR RESIDENTIAL (INCHES)	THICKNESS FOR MINOR COMMERCIAL (INCHES)
DIRT, GRASS, OR GRAVEL	(1) ASPHALT CONC. SW/D/BP (2) SUBBASE COURSE	3 6	4 8	(1) SUBBASE COURSE EXCAVATE AS NECESSARY	6	9
STONE	(1) ASPHALT CONC. SW/D/BP (2) SUBBASE COURSE	3 6	4 8	(1) STONE EXCAVATE AS NECESSARY	8	11
ASPHALT CONCRETE (RESURFACING)	(1) ASPHALT CONC. SW/D/BP (2) TRUING AND LEVELING COURSE	1.5 AS NECESSARY	1.5 AS NECESSARY	NOT APPLICABLE - ALL WORK ON AN EXISTING PAVED DRIVEWAY IS WITHIN THE DRIVEWAY PAVEMENT LENGTH		
ASPHALT CONCRETE (RECONSTRUCTION)	(1) ASPHALT CONC. SW/D/BP (2) SUBBASE COURSE	3 6	4 8	NOT APPLICABLE - ALL WORK ON AN EXISTING PAVED DRIVEWAY IS WITHIN THE DRIVEWAY PAVEMENT LENGTH		
PORTLAND CEMENT CONCRETE	(1) PORTLAND CEMENT CONC. SW/D (2) SUBBASE COURSE	6 6	6 8	NOT APPLICABLE - ALL WORK ON AN EXISTING PAVED DRIVEWAY IS WITHIN THE DRIVEWAY PAVEMENT LENGTH		

NOTE: ASPHALT CONC. SW/D/BP = ASPHALT CONCRETE SIDEWALKS, DRIVEWAYS, AND BICYCLE PATHS
PORTLAND CEMENT CONC. SW/D = PORTLAND CEMENT CONCRETE SIDEWALKS AND DRIVEWAYS

NOTE: ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED

DRIVEWAY DESIGN GUIDELINES
FIGURE 5A-2

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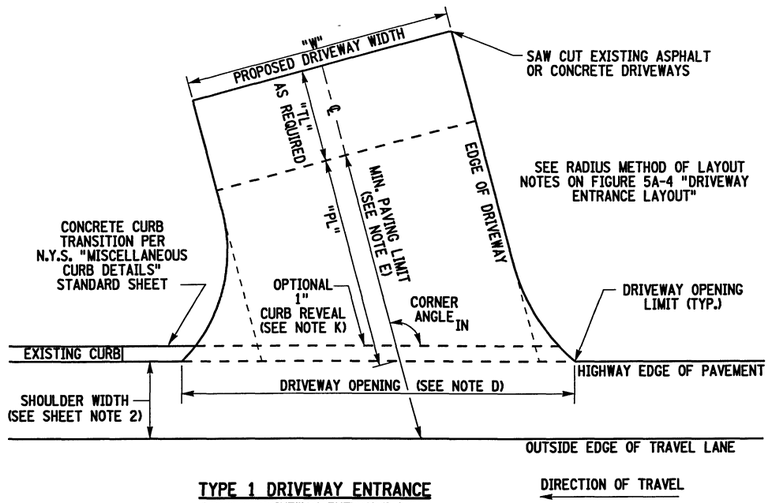
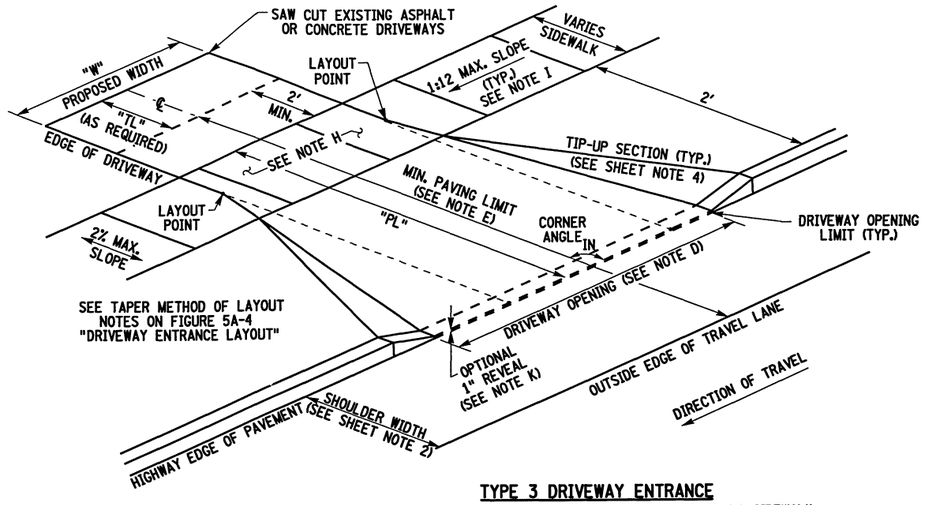


TYPE 1 DRIVEWAY ENTRANCE

TYPICAL DRIVEWAY ENTRANCE TYPE
NO SCALE

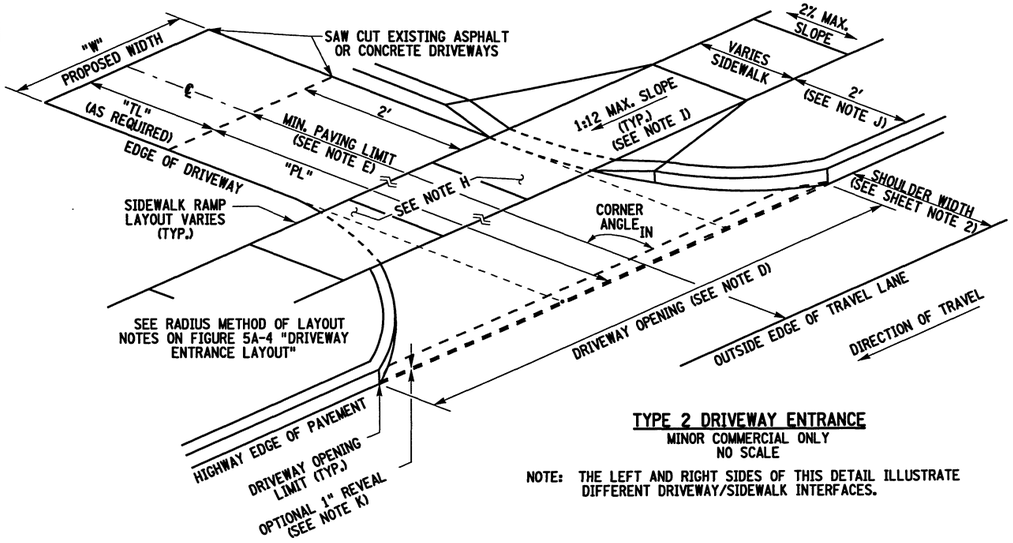


TYPE 3 DRIVEWAY ENTRANCE

TAPER METHOD WITH SIDEWALK AWAY FROM CURB OR NO SIDEWALK
NO SCALE

NOTES :

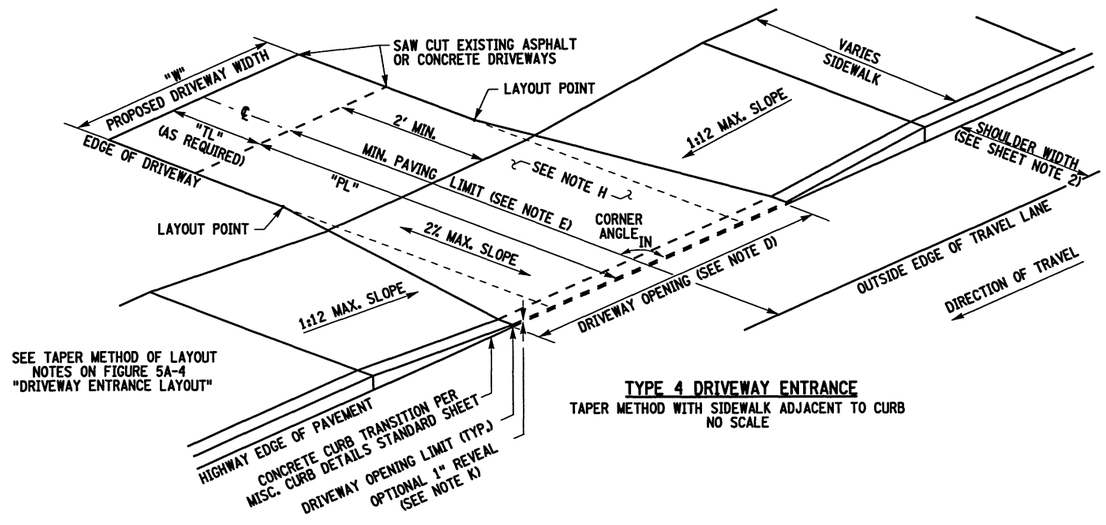
1. REFER TO FIGURE 5A-2 "DRIVEWAY DESIGN GUIDELINES" FOR GENERAL NOTES, NOTES REFERENCED BY A LETTER, AND DEFINITIONS OF TERMS.
2. 'SHOULDER WIDTH' REFERS TO THE PAVED SHOULDER WIDTH. THE SHOULDER WIDTH MAY BE DESIGNATED AS A PARKING LANE, BIKE LANE, CURB OFFSET, OR OTHER PAVED AREA.
3. THE DETAILS SHOW THE PAVEMENT LENGTH ("PL") EXTENDING TO THE MINIMUM PAVING LIMIT ("MPL"). HOWEVER, THE "PL" CAN EXTEND BEYOND THE "MPL" AS SPECIFIED ON THE DRIVEWAY TABLE IN THE CONTRACT DOCUMENTS
4. A DRIVEWAY TIP-UP SECTION SHOULD EXTEND TO A LOGICAL TERMINI (EXAMPLE: SIDEWALK EDGE, WHERE THE DRIVEWAY GRADE MATCHES EXISTING GROUND, OR LAYOUT POINT). FOR REFERENCE, A REASONABLE LENGTH FOR TAPERING THE TIP-UP SECTION BACK TO THE EDGE OF DRIVEWAY IS 3 TO 4 TIMES THE LENGTH OF CURB DROP. THE TIP-UP SECTION IS NOT PART OF THE DRIVEWAY OPENING WIDTH. REFER TO THE N.Y.S. "MISCELLANEOUS CURB DETAILS" STANDARD SHEET FOR THE CURB TRANSITION.



TYPE 2 DRIVEWAY ENTRANCE

MINOR COMMERCIAL ONLY
NO SCALE

NOTE: THE LEFT AND RIGHT SIDES OF THIS DETAIL ILLUSTRATE DIFFERENT DRIVEWAY/SIDEWALK INTERFACES.



TYPE 4 DRIVEWAY ENTRANCE

TAPER METHOD WITH SIDEWALK ADJACENT TO CURB
NO SCALE

TABLE 4 - DRIVEWAY ENTRANCE TYPE SELECTION

DRIVEWAY ENTRANCE TYPE	ENTRANCE WIDENING METHOD	CONDITIONS FOR USE						RECOMMENDED USE
		DRIVEWAY CLASSIFICATION*	CORNER ANGLE	TRAVEL LANE AND SHOULDER WIDTH	CURB	SIDEWALK	HIGHWAY DESIGN SPEED	
TYPE 1	RADIUS	RESIDENTIAL OR MINOR COMMERCIAL	60° TO 120°	ANY	USE WITH OR WITHOUT CURB	USE WITH OR WITHOUT SIDEWALK	ANY SPEED	RECOMMENDED FOR ALL LOCATIONS (EXCEPT FOR MINOR COMMERCIAL WITH CURB)
TYPE 2	RADIUS	MINOR COMMERCIAL ONLY	60° TO 120°	ANY	USE ONLY WITH CURB	USE WITH OR WITHOUT SIDEWALK	ANY SPEED	RECOMMENDED ONLY FOR MINOR COMMERCIAL WITH CURB
TYPE 3	TAPER	RESIDENTIAL OR MINOR COMMERCIAL	80° TO 100°	16' ** OR GREATER	USE ONLY WITH CURB***	USE ONLY WITH SIDEWALK OFFSET A MIN. OF 2' FROM THE EDGE OF PAVEMENT OR WITHOUT SIDEWALK	ONLY LOW SPEED (45 MPH OR LESS)	ALTERNATIVE ENTRANCE TYPE (TYPICALLY FOR URBAN AREA USE)
TYPE 4	TAPER	RESIDENTIAL OR MINOR COMMERCIAL	80° TO 100°	16' ** OR GREATER	USE ONLY WITH CURB***	USE ONLY WITH SIDEWALK LESS THAN 2' FROM OR ADJACENT TO THE EDGE OF PAVEMENT	ONLY LOW SPEED (45 MPH OR LESS)	ALTERNATIVE ENTRANCE TYPE (TYPICALLY FOR URBAN AREA USE)

* THE TABLE ONLY APPLIES TO RESIDENTIAL AND MINOR COMMERCIAL DRIVEWAYS. FOR OTHER DRIVEWAY CLASSIFICATIONS (MAJOR COMMERCIAL, FIELD ENTRANCE, ETC.), REFER TO THE 'POLICY AND STANDARDS FOR THE DESIGN OF ENTRANCES TO STATE HIGHWAYS'.

** FOR DRIVEWAYS WITH A DRIVEWAY OFFSET LESS THAN 16', THE TAPER METHOD IS NOT GENERALLY RECOMMENDED, UNLESS IT CAN BE FIELD VERIFIED THAT THE DRIVEWAY ENTRANCE WIDTH WILL ACOMMODATE THE VEHICLES THAT USE THE DRIVEWAY ON A REGULAR BASIS.

*** TYPE 3 AND 4 DRIVEWAY ENTRANCES CAN BE USED WITHOUT CURB IF A TAPER STYLE ENTRANCE BETTER MATCHES THE HIGHWAY CORRIDOR AESTHETICS OR SPECIFIC SITE CONDITIONS THAN A RADIUS STYLE ENTRANCE.

NOTE: ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED

DRIVEWAY ENTRANCE DETAILS
FIGURE 5A-3

DRIVEWAY OPENING LAYOUT

THERE ARE TWO RECOMMENDED DRIVEWAY OPENING WIDENING METHODS: (1.) THE RADIUS METHOD, WHICH UTILIZES A CIRCULAR ARC TO WIDEN THE DRIVEWAY, AND (2.) THE TAPER METHOD, WHICH UTILIZES A STRAIGHT TAPER WIDENING OUT AT AN ESTABLISHED FLARE RATE. THE RADIUS METHOD IS THE TYPICAL METHOD, ALTHOUGH THE TAPER METHOD IS A REASONABLE ALTERNATIVE FOR URBAN AREAS AND OTHER AREAS WHERE IT MIGHT BETTER MATCH THE HIGHWAY CORRIDOR AESTHETICS AND FUNCTIONALITY. SEE TABLE 4 - 'DRIVEWAY ENTRANCE TYPE SELECTION' ON FIGURE 5A-3 'DRIVEWAY ENTRANCE DETAILS' FOR ADDITIONAL VARIABLES CONCERNING THE SELECTION OF A DRIVEWAY OPENING WIDENING METHOD.

RADIUS METHOD OF LAYOUT

STEP 1. LOCATE AN OFFSET LINE 11' PARALLEL FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE.

STEP 2. SCRIBE A LINE PARALLEL TO THE OFFSET LINE, OFFSET "R" METERS (SEE TABLE 5).

STEP 3. SCRIBE A LINE PARALLEL TO THE EDGE OF DRIVEWAY (NEAR SIDE), OFFSET "R" METERS.

STEP 4. FIND THE CENTER POINT OF THE CORNER RADIUS ARC, WHICH IS LOCATED AT THE INTERSECTION OF THE LINES FROM STEPS 2 AND 3.

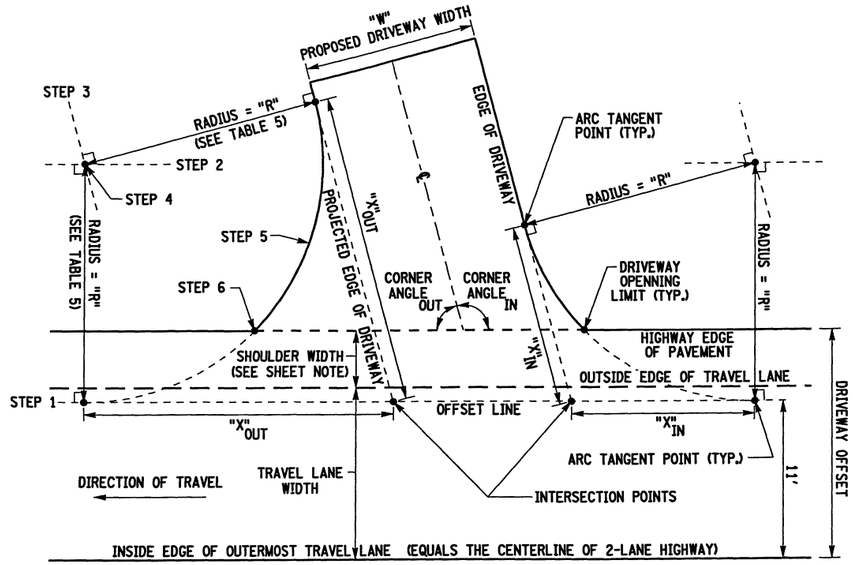
STEP 5. FROM THE CENTER POINT, SCRIBE AN ARC WITH RADIUS "R", WHICH IS TANGENT TO BOTH THE OFFSET LINE AND THE EDGE OF DRIVEWAY. THE ARC SHOULD INTERSECT THE LINES AT THE DISTANCES "X" LISTED IN TABLE 6. DISTANCES IN TABLE 6 ARE AS MEASURED FROM THE INTERSECTION POINT OF THE OFFSET LINE (NOT THE EDGE OF TRAVEL LANE) AND THE PROJECTED EDGE OF DRIVEWAY TO EITHER OF THE ARC TANGENT POINTS (SAME DISTANCE ALONG THE OFFSET LINE OR ALONG THE PROJECTED EDGE OF DRIVEWAY).

STEP 6. FIND THE DRIVEWAY OPENING LIMIT POINT WHICH IS WHERE THE ARC INTERSECTS THE HIGHWAY EDGE OF PAVEMENT.

STEP 7. REPEAT STEPS 1 - 6 FOR THE OTHER SIDE OF THE DRIVEWAY OPENING.

FIELD LAYOUT NOTES :

FOR THE RADIUS METHOD OF LAYOUT, IF OBSTRUCTIONS HINDER THE ABILITY TO SCRIBE THE CORNER ANGLE ARC FROM THE CENTER POINT, LOCATE POINTS ALONG THE ARC BY USING "Y" VALUES FROM TABLES 8 THROUGH 10 ON FIGURE 5A-5 'DRIVEWAY OPENING LIMITS' AT VARIOUS DRIVEWAY OFFSETS ("Y" IS MEASURED FROM THE PROJECTED EDGE OF DRIVEWAY TO THE ARC).



RADIUS LAYOUT

VALID FOR RESIDENTIAL OR MINOR COMMERCIAL DRIVEWAYS
(FOR THE VALUES OF "R" AND "X" SEE TABLES 5 AND 6, RESPECTIVELY)
NO SCALE

TABLE 5 RADIUS METHOD - CORNER RADIUS	
DRIVEWAY CLASSIFICATION	"R"
RESIDENTIAL "W" ≤ 13'	16'
RESIDENTIAL "W" > 13'	13'
MINOR COMMERCIAL (ALL WIDTHS)	33'

TABLE 6
RADIUS METHOD - DISTANCE FROM INTERSECTION PT. TO ARC TANGENT PT.

CORNER ANGLE	"X", FT		
	RESIDENTIAL DRIVEWAY ≤ 13' WIDE (R = 16')	RESIDENTIAL DRIVEWAY > 13' WIDE (R = 13')	MINOR COMMERCIAL DRIVEWAY (R = 33')
60°	28.5	23.0	56.8
65°	25.9	20.7	51.5
70°	23.6	18.7	46.9
75°	21.3	17.1	43.0
80°	19.7	15.7	39.4
85°	18.0	14.4	35.8
90°	16.4	13.1	32.8
95°	15.1	12.1	30.2
100°	13.8	11.2	27.6
105°	12.8	10.2	25.3
110°	11.5	9.2	23.0
115°	10.5	8.5	21.0
120°	9.5	7.5	19.0

TABLE 6 NOTES:
- DIMENSIONS AND ANGLES MAY BE INTERPOLATED FOR VALUES OTHER THAN THOSE SHOWN IN THE TABLE.

•• "X" REFERS TO EITHER X_{IN} OR X_{OUT}. THE CORNER ANGLE FOR X_{IN} + X_{OUT} MUST EQUAL 180°.

TAPER METHOD OF LAYOUT

TAPER METHOD OF LAYOUT IS NOT RECOMMENDED FOR DRIVEWAYS WITH CORNER ANGLES LESS THAN 80° OR GREATER THAN 100°, NOR IS IT RECOMMENDED FOR DRIVEWAYS WITH A DRIVEWAY OFFSET (OUTER TRAVEL LANE + PAVED SHOULDER) LESS THAN 16', UNLESS IT CAN BE FIELD VERIFIED THAT THE DRIVEWAY ENTRANCE WIDTH WILL ACCOMMODATE THE VEHICLES THAT USE THE DRIVEWAY ON A REGULAR BASIS.

STEP 1. SCRIBE A LINE (LAYOUT LINE) OFFSET THE APPROPRIATE 'LAYOUT DISTANCE' (SEE TABLE 7) FROM THE INSIDE EDGE OF THE OUTERMOST TRAVEL LANE.

STEP 2. LOCATE THE TAPER LAYOUT POINT, WHICH IS AT THE INTERSECTION OF THE EDGE OF DRIVEWAY AND THE LAYOUT LINE.

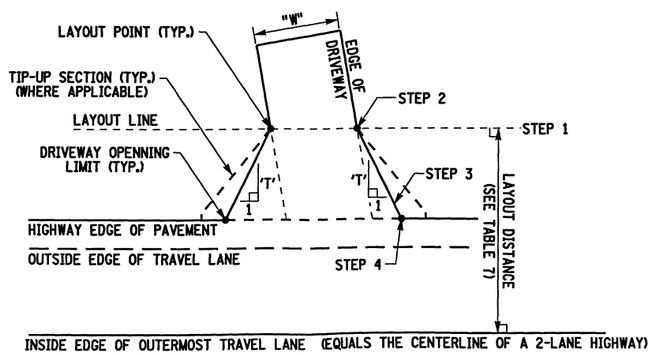
STEP 3. SCRIBE A 1:'T' (SEE TABLE 7) TAPER FROM THE LAYOUT POINT TO THE EDGE OF PAVEMENT (WITH 'T' BEING PERPENDICULAR TO THE EDGE OF TRAVEL LANE).

STEP 4. FIND THE DRIVEWAY OPENING LIMIT POINT WHICH IS WHERE THE TAPER INTERSECTS THE EDGE OF PAVEMENT.

STEP 5. REPEAT STEPS 1 - 4 FOR THE OTHER SIDE OF THE DRIVEWAY OPENING.

ALTERNATE TAPER METHOD OF LAYOUT

FOLLOW THE STEPS AS PER THE OTHER TAPER LAYOUT METHOD, EXCEPT FOR STEPS 3. AND 4. LOCATE THE DRIVEWAY OPENING LIMIT BY USING THE APPROPRIATE "Y" VALUE FROM EITHER TABLE 11 OR 12 ON FIGURE 5A-5 'DRIVEWAY OPENING LIMITS'. "Y" IS THE DISTANCE BETWEEN THE DRIVEWAY OPENING LIMIT AND THE INTERSECTION POINT OF THE PROJECTED EDGE OF DRIVEWAY AND THE EDGE OF PAVEMENT.



TAPER LAYOUT

VALID FOR RESIDENTIAL OR MINOR COMMERCIAL DRIVEWAYS
(FOR THE VALUE OF 'T' SEE TABLE 7)
NO SCALE

TABLE 7 - TAPER METHOD VALUES		
DRIVEWAY CLASSIFICATION	TAPER (1:'T')	LAYOUT DISTANCE*
RESIDENTIAL	1:2	28'
MINOR COMMERCIAL	1:1.5	41'

* LAYOUT DISTANCE IS MEASURED FROM THE INSIDE EDGE OF OUTERMOST TRAVEL LANE. FOR A TYPICAL 12' WIDE TRAVEL LANE THIS IS EQUIVALENT TO AN OFFSET FROM THE OUTSIDE EDGE OF TRAVEL LANE OF 16' FOR RESIDENTIAL DRIVEWAYS OR 30' FOR MINOR COMMERCIAL DRIVEWAYS.

NOTES :

1. REFER TO FIGURE 5A-2 "DRIVEWAY DESIGN GUIDELINES" FOR GENERAL NOTES.
2. THE SHOULDER WIDTH REFERS TO THE PAVED SHOULDER WIDTH. THE SHOULDER WIDTH MAY BE DESIGNATED AS A PARKING LANE, BIKE LANE, CURB OFFSET, OR OTHER PAVED AREA.

NOTE: ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED

DRIVEWAY ENTRANCE LAYOUT
FIGURE 5A-4

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TABLES 8 THROUGH 13 ARE FOR PRELIMINARY CURBLINE LAYOUT OF THE DRIVEWAY OPENING WIDTHS. USE THE LAYOUT METHODS DESCRIBED ON FIGURE 5A-4 "DRIVEWAY ENTRANCE LAYOUT" FOR FINAL DRIVEWAY LAYOUT (ALTHOUGH THE DRIVEWAY OPENING LIMITS SHOULD MATCH BETWEEN THE PRELIMINARY AND THE FINAL LAYOUT TECHNIQUES).

TABLE 8
DRIVEWAY OPENING "Y" (FT) VALUES FOR
RADIUS METHOD - RESIDENTIAL DRIVEWAYS ≤ 13' WIDE (R = 16')

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
60°	22.3	19.7	17.4	15.7	14.1	12.5	11.2	9.8	8.9	7.9	6.9
65°	19.7	17.1	15.1	13.5	11.8	10.5	9.2	8.2	7.2	6.2	5.2
70°	17.7	15.1	13.1	11.5	10.2	8.9	7.9	6.6	5.9	4.9	4.3
75°	15.7	13.1	11.5	9.8	8.5	7.2	6.2	5.2	4.6	3.9	3.3
80°	14.1	11.5	9.8	8.5	7.2	5.9	5.2	4.3	3.6	3.0	2.3
85°	12.5	10.2	8.5	6.9	5.9	4.9	3.9	3.3	2.6	2.0	1.6
90°	10.8	8.9	7.2	5.9	4.9	3.9	3.3	2.6	2.0	1.6	1.0
95°	9.5	7.5	5.9	4.9	3.9	3.0	2.3	2.0	1.3	1.0	0.7
100°	8.5	6.6	4.9	3.9	3.0	2.3	1.6	1.3	1.0	0.7	0.3
105°	7.2	5.6	4.3	3.0	2.3	1.6	1.3	0.7	0.7	0.3	0.0
110°	6.6	4.6	3.3	2.3	1.6	1.0	0.7	0.3	0.3	0.0	0.0
115°	5.6	3.6	2.6	1.6	1.0	0.7	0.3	0.3	0.0	0.0	0.0
120°	4.6	3.0	2.0	1.3	0.7	0.3	0.0	0.0	0.0	0.0	0.0

TABLE 9
DRIVEWAY OPENING "Y" (FT) VALUES FOR
RADIUS METHOD - RESIDENTIAL DRIVEWAYS > 13' WIDE (R = 16')

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
60°	17.4	14.8	12.8	11.2	9.8	8.5	7.2	6.2	5.2	4.6	3.6
65°	15.4	12.8	11.2	9.5	8.2	6.9	5.9	4.9	4.3	3.3	2.6
70°	13.5	11.2	9.5	8.2	6.9	5.9	4.9	3.9	3.3	2.6	2.0
75°	12.1	9.8	8.2	6.9	5.6	4.6	3.9	3.0	2.3	2.0	1.3
80°	10.8	8.5	6.9	5.9	4.6	3.6	3.0	2.3	2.0	1.3	1.0
85°	9.2	7.2	5.9	4.6	3.6	3.0	2.3	1.6	1.3	1.0	0.7
90°	8.2	6.2	4.9	3.9	3.0	2.3	1.6	1.3	1.0	0.7	0.3
95°	7.2	5.2	4.3	3.3	2.3	1.6	1.3	0.7	0.3	0.3	0.0
100°	6.2	4.6	3.3	2.3	1.6	1.3	0.7	0.3	0.3	0.0	0.0
105°	5.6	3.9	2.6	2.0	1.3	0.7	0.3	0.3	0.0	0.0	0.0
110°	4.6	3.3	2.0	1.3	1.0	0.3	0.3	0.0	0.0	0.0	0.0
115°	3.9	2.6	1.6	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0
120°	3.3	2.0	1.0	0.7	0.3	0.0	0.0	0.0	0.0	0.0	0.0

TABLE 10
DRIVEWAY OPENING "Y" (FT) VALUES FOR
RADIUS METHOD - MINOR COMMERCIAL DRIVEWAYS (R = 33')

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' (0')	13' (1')	14' (2')	15' (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
60°	48.2	44.6	41.7	39.0	36.7	34.8	32.8	31.2	29.5	27.9	26.2
65°	43.3	39.4	36.7	34.1	32.2	30.2	28.2	26.6	24.9	23.6	22.3
70°	38.7	35.1	32.2	29.9	27.9	25.9	24.3	22.6	21.3	20.0	18.7
75°	34.8	31.2	28.5	26.2	24.3	22.6	21.0	19.4	18.0	16.7	15.7
80°	31.2	27.6	24.9	23.0	21.0	19.4	17.7	16.4	15.1	14.1	12.8
85°	27.9	24.6	22.0	20.0	18.0	16.7	15.1	13.8	12.8	11.5	10.5
90°	24.9	21.7	19.4	17.4	15.7	14.1	12.8	11.5	10.5	9.5	8.5
95°	22.3	19.0	16.7	14.8	13.5	11.8	10.5	9.5	8.5	7.5	6.9
100°	19.7	16.7	14.4	12.8	11.2	9.8	8.9	7.5	6.6	5.9	5.2
105°	17.7	14.8	12.5	10.8	9.2	8.2	6.9	5.9	5.2	4.6	3.9
110°	15.4	12.5	10.5	8.9	7.5	6.6	5.6	4.6	3.9	3.3	2.6
115°	13.5	10.8	8.9	7.2	5.9	4.9	4.3	3.3	2.6	2.3	1.6
120°	11.5	8.9	7.2	5.6	4.6	3.6	3.0	2.3	1.6	1.3	1.0

TABLE 11
DRIVEWAY OPENING "Y" (FT) VALUES FOR
TAPER METHOD - RESIDENTIAL DRIVEWAYS

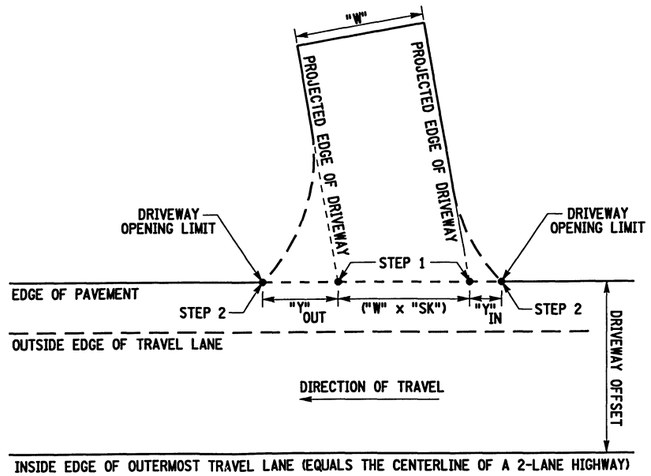
CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' • (0')	13' • (1')	14' • (2')	15' • (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
80°	11.2	10.5	9.8	9.2	8.5	7.9	7.2	6.6	5.9	5.2	4.6
85°	9.8	9.2	8.5	7.9	7.5	6.9	6.2	5.6	5.2	4.6	3.9
90°	8.2	7.9	7.2	6.9	6.2	5.9	5.2	4.9	4.3	3.9	3.3
95°	6.9	6.6	6.2	5.6	5.2	4.9	4.3	3.9	3.6	3.3	3.0
100°	5.6	5.2	4.9	4.6	4.3	3.9	3.6	3.3	3.0	2.6	2.3

• SEE SHEET NOTE 3.

TABLE 12
DRIVEWAY OPENING "Y" (FT) VALUES FOR
TAPER METHOD - MINOR COMMERCIAL DRIVEWAYS

CORNER ANGLE	DRIVEWAY OFFSET FROM INSIDE EDGE OF TRAVEL LANE (OR OFFSET FROM OUTSIDE EDGE OF A 12' TRAVEL LANE)										
	12' • (0')	13' • (1')	14' • (2')	15' • (3')	16' (4')	17' (5')	18' (6')	19' (7')	20' (8')	21' (9')	22' (10')
80°	24.9	24.3	23.3	22.6	21.7	21.0	20.0	19.4	18.4	17.4	16.7
85°	22.3	21.7	21.0	20.0	19.4	18.7	18.0	17.1	16.4	15.7	15.1
90°	19.7	19.0	18.4	17.7	17.1	16.4	15.7	15.1	14.4	13.8	13.1
95°	17.4	16.7	16.1	15.4	15.1	14.4	13.8	13.1	12.8	12.1	11.5
100°	14.8	14.1	13.8	13.1	12.8	12.1	11.8	11.2	10.8	10.2	9.8

• SEE SHEET NOTE 3.



PRELIMINARY DRIVEWAY OPENING LAYOUT

ALTHOUGH THE DETAIL ONLY SHOWS A RADIUS ENTRANCE TYPE, THE DETAIL APPLIES TO BOTH RADIUS AND TAPER METHODS OF LAYOUT
(FOR THE VALUES OF 'Y' SEE TABLES 8 THROUGH 12)
(FOR THE VALUE OF "SK" SEE TABLE 13)
NO SCALE

TABLE 13 - DRIVEWAY OPENING WIDTH CALCULATION

DRIVEWAY OPENING WIDTH = $"Y"_{IN}$ + ("W" x "SK") + $"Y"_{OUT}$

CORNER ANGLE	60°/120°	65°/115°	70°/110°	75°/105°	80°/100°	85°/95°	90°
SKEW FACTOR ("SK")	1.16	1.10	1.07	1.04	1.02	1.01	1.00

TABLE NOTE:
IF THE DRIVEWAY IS A ONE-WAY ENTRANCE OR EXIT, THEN "Y"(OUT) OR "Y"(IN), RESPECTIVELY, IS NOT INCLUDED IN THE EQUATION. ALTHOUGH FOR CURBED HIGHWAYS, ADDITIONAL DRIVEWAY OPENING WIDTH SHOULD BE ADDED TO ALLOW FOR A SMALL CORNER CURB RADIUS, TO ELIMINATE A SHARP CORNER BEND IN THE CURBLINE (THIS IS SAFER FOR SNOWPLOW OPERATIONS).

SAMPLE CALCULATION :
A 10' WIDE RESIDENTIAL DRIVEWAY CONNECTING WITH A CORNER ANGLE OF 70° (THEREFORE RADIUS METHOD REQUIRED) TO A HIGHWAY WITH A 12' WIDE TRAVEL LANE AND 4' PAVED SHOULDER (= 16' DRIVEWAY OFFSET) WOULD REQUIRE A DRIVEWAY OPENING WIDTH = $"Y"_{70°}$ + ("W" x "SK") + $"Y"_{110°}$ = 10.2 + (10 x 1.07) + 1.6 = 22.5'.

FIELD LAYOUT :

STEP 1. LOCATE THE INTERSECTION POINTS OF THE PROJECTED EDGES OF DRIVEWAY AND THE EDGE OF PAVEMENT.

STEP 2. ALONG THE EDGE OF PAVEMENT, MEASURE OUT FROM THE INTERSECTION POINTS AT DISTANCES $"Y"_{IN}$ AND $"Y"_{OUT}$ RESPECTIVELY TO LOCATE THE DRIVEWAY OPENING LIMITS.

NOTES :

1. REFER TO FIGURE 5A-2 "DRIVEWAY DESIGN GUIDELINES" FOR GENERAL NOTES, NOTES REFERENCED BY A LETTER, AND DEFINITION OF TERMS.
2. THE DRIVEWAY OPENING WIDTH VARIES DEPENDING ON THE DRIVEWAY ENTRANCE WIDENING METHOD USED (RADIUS OR TAPER). THE TAPER METHOD GENERALLY WILL PROVIDE A MORE NARROW DRIVEWAY OPENING WIDTH.
3. FOR DRIVEWAYS WITH A DRIVEWAY OFFSET LESS THAN 16', THE TAPER METHOD IS NOT GENERALLY RECOMMENDED, UNLESS IT CAN BE FIELD VERIFIED THAT THE DRIVEWAY ENTRANCE WIDTH WILL ACCOMMODATE THE VEHICLES THAT USE THE DRIVEWAY ON A REGULAR BASIS.
4. DIMENSIONS AND ANGLES MAY BE INTERPOLATED FOR VALUES OTHER THAN THOSE SHOWN IN THE TABLES.
5. "Y" REFERS TO EITHER $"Y"_{IN}$ OR $"Y"_{OUT}$

NOTE: ALL DIMENSIONS IN INCHES UNLESS OTHERWISE NOTED

DRIVEWAY OPENING LIMITS
FIGURE 5A-5